

# ARTICLES

## WINE.

A FRENCH cook has informed us that there are precisely 131 different varieties of wine which a gentleman may put upon his table without a blush. Now, in the year 1854—the last year from which the returns are at hand—it appears that Port, Sherry, and Marsala form, together, no less than 86 per cent. of the entire consumption of the British Islands. In that year there were imported into this country precisely 6,775,858 gallons of wine, and the contributions of the various wine-growing countries stand, proportionally, as follows :—

Spain . . .	38·39	Cape . . .	3·00
Portugal . .	36·69	The Rhine . .	1·01
Sicily . . .	11·18	Madeira . . .	0·60
France . . .	8·12	Canary . . .	0·16

An insignificant amount of wine “from other countries” is lumped in with the Sicilian contribution; in all other respects, the figures are exactly those of a dry official return. We Englishmen stick to our Port and Sherry, despite the attractions of the secondary wines of France and Germany. France, pre-eminently the home of the vine, and the skilled manufacturer of the diviner drinks which alleviate the trials of suffering humanity, supplies us with a trifle more than eight per cent. of our entire consumption. In other words, for every eight bottles of Claret and Champagne and Burgundy and Hermitage drunk in these islands, we uncork and consume about thirty-nine bottles of Sherry and thirty-seven bottles of Port. One is scarcely prepared for such a conclusion, for within the last twenty years there appears to have occurred a remarkable change in the character of the wines served at the houses of the opulent classes. The absence of the claret-jug after dinner at the table of a professional man or merchant in London would now be remarked. Twenty years ago, its presence would have been regarded as a phenomenon, and as a proof of hidden opulence or of the recklessness of approaching bankruptcy.

How is this? Is the explanation beer?—or gin?—or habit?—or tea and coffee?—or a damp climate?—or the duty of 5s. 9d. per gallon? It is very much the fashion to attribute the result to the last cause, and to assume that if a duty of 1s. were substituted for the 5s. 9d. duty, we should all become drinkers of the lighter and cheaper wines of Germany and France. It is doubtful if this be so. The leading houses in the wine-trade have for the last half century over and over again made experiments as to the possibility of bringing the lighter wines of the continent into fashion, and these experiments have universally failed.

They have been compelled to re-export their ventures to the French ports—to Hamburg or elsewhere, and to put up with their losses as best they might. The danger in such cases is lest we argue from a limited experience. There are a few thousands of travelling English who wander about on the continent for a few months or weeks of every year, and return home with the most earnest desire to obtain the drink of their holiday for the drink of their working lives. Would even this extremely limited section of the community persist in their exceptional appetencies when sucked back again into the monotonous British vortex of beer, sherry, and port?—or, if they did so in the dog-days, would they do so in the midst of the November fogs—the February snows—and the east winds of March? Could the Chancellor of the Exchequer depend upon their consistency? At present wine contributes no less a sum than £1,800,000 to the imperial revenue, and if a loss were incurred from this source, it must be made up from another. How would English ladies—of course we are speaking only of the upper ten thousand—take to Maconnais and the wines of Basse Bourgogne? From our own experience, we should say, not at all. At the dinner-table and at the buffet of the ball-room, they are not averse to one, it may be two, glasses of sparkling Cliquet, well iced; but the dear creatures invariably reject claret as “nasty sour stuff”—ay, were it the primest growth of Chateau Margaux or Lafitte. At their leg-of-mutton luncheons at 2 p.m., the seraphim appear to prefer pale ale or bottled stout. But the consumption of the ten or twenty thousand is nothing to the purpose. The question is, what would the millions do? Would the sailor give up his rum and the cabman his beer? Would the hundreds of thousands of port-and-sherry families become drinkers of second-class French wines? The consumption of wines of the finer sort has little or nothing to do with the question, and would in all probability remain unchanged. When you give 84s. a dozen for claret, the duty does not enter in any very obstructive manner into price.

The present consumption of foreign wine in these islands is about 6,500,000 gallons. It is therefore obvious that in order to retain the revenue from this source at its present amount—namely, £1,800,000—you must stimulate consumption to the extent of 36,000,000 gallons, and even then the loss upon the Customs and Excise consequent upon the abandonment of beer and spirits has to be made up. It is a strange thing to say, but it really appears more than doubtful if the wine-growing countries of Europe could supply us with such a quantity of wine, such as Englishmen would look at. The area of production of the finer growths is circumscribed within the narrowest limits. Sir J. Emerson Tennent, in his recent and most valuable work upon this subject, has collected the statistics of some of the more valuable growths. We venture to take a few of his figures. Clos Vougeot grows in a farm of eighty acres—Romanée Conti in one of six and a half. The Mont Rachet of the Côte d’Or is divided into three classes; one of which sells at one-third less than

the other two. One small valley in Madeira produces, or used to produce, the finest Malmsey. The red wines of Portugal, made in the Alto Douro, cannot be made in the adjoining provinces. The district of the Rheingau, between Rudesheim and Mayence, is about nine miles in length, and four-and-a-half in breadth. The south side of a little hill produces the far famed Johannisberg, and the Steinberg—its costly mate—is grown in the vineyard of a suppressed monastery. All chemical and agricultural skill has broken down in the attempt to improve or extend the growth of the vines for wine-growing purposes. Bacchus will have nothing to do with guano. A solemn inquiry was made in the year 1849 in France upon this point, and here are the very words of the Report in answer: “C’est un fait notoire, que généralement (à part les plantes de premier choix) la vigne a dégénéré en France, qu’elle a perdu en délicatesse une partie de ce qu’on lui a fait gagner en fécondité; et que l’adoption des nouvelles méthodes de culture, l’invasion des races communes, l’abus des fumures et des engrais n’ont multiplié ses fruits qu’en altérant leur primitif savor.” This is a curious fact, but it finds its counterpart in the history of the tobacco-plant. The very finest leaf can only be procured from one gently sloping hill in the island of Cuba. The soil has been analysed, and, as far as human skill could do it, re-produced. The plants have been set under the same aspect, and submitted to the same thermometrical and hygrometrical conditions, but the result has been—invariable failure.

With regard to wines of a second-class, another fact must be borne in mind. When we assume that the consumption of wines in this country would be increased to any great extent, we assume also that their price would undergo a proportionate increase. It would also be well to examine what is the result when the duty is next to nothing in amount. In Holland the population remain constant to their beer and their Hollands. In Belgium the duty is but one penny a gallon, and yet the Belgians consume but three bottles of wine a-head per annum. Beer, again. In Paris, on the other hand, the consumption is enormous; it is estimated at from 138 to 216 bottles per head; notwithstanding the octroi. On the whole it is much to be apprehended that any reduction of duties, however large, would have but a slight effect upon the consumption of a country wedded to other habits and other drinks. The annual British consumption of Port and Sherry is about 2,500,000 gallons of each; of Sherry, perhaps, an approach to 3,000,000 gallons would be nearer the mark. To these two wines we are constant. They have become thoroughly naturalised. Madeira has suffered from blight. The production of that imperial wine has fallen off from 300,295 gallons, in 1827, to 42,874 gallons in 1854; and even this limited quantity will probably be reduced in amount. The explanation must be sought for in the blight which fell upon the vineyards some seven or eight years ago; and to the fact, that the Madeira farmers have discovered that it answers their purpose better to grow the plants on which the cochineal insect finds its food. Alas! for the lost Pleiad!

Alas ! for that royal wine ! Our only consolation must be that there remains enough in stock for the use of men now of middle age. Posterity must take care of itself. Our descendants could never appreciate the pungency of our regret, or the extent of their own loss. It is something to have lived through the Madeira epoch of the world. Finally, it must have struck every London diner-out, how much Rhenish wine has disappeared from the table within the last few years. England now only takes 60,000 gallons of wine from the Rheingau, and from the bright Moselle—and Germany imports more wine for her own use than she exports for foreign consumption.

Take it all for all, the British Islands are not badly off in respect of drink. No Englishman of sane mind will speak lightly of such beer as can now be produced in this country. Our tea is

better than can be found elsewhere out of China, Russia excepted; and in our coffee there is a marked improvement. If we regret that practical experience has shown that the finer sorts of Burgundy suffer from sea-sickness, in compensation we are obtaining far easier access to the Gironde, and the more delicate wines of Bordeaux. There is, however, a striking deterioration in Port: the finer qualities ordered are almost beyond the reach of persons of moderate means; but Sherry, for ordinary purposes, is better, and more readily procurable than it used to be twenty years ago. Marsala is no bad substitute for the inferior sorts. Compare our happy condition with that of the ancients! who, having cut out blocks of the hardened nastiness which they called wine, melted them in hot water to stimulate their praises of these products of Asia or Arcadia. PHILIGENUS.



#### AN OLD CHURCH LIBRARY.

"LANGLEY MARSH! not a very inviting locality I should judge. What could attract you to a marsh, in your longing for country air?"

"It is no marsh. The soil is gravel. Believe Lady Hertford, the invoked by Thomson, the Countess who wrote thus to the Countess of Pomfret, about Richings, not a mile distant from my calumniated village: 'One great addition to the pleasure of living here is the gravelly soil, which after a day of rain, if it holds up for two or three hours, one may walk over without being wet through one's shoes.'"

"Well. Hume says, all Britain was marshy once; and I suppose this marsh has been drained in some rude agricultural fashion of the days before tiles, and instead of quagmires you have only standing pools."

"Hume misquotes his authority when he says all Britain was marshy once; and I have little doubt some blundering topographer has misquoted an ancient title-deed, and made libellous English out of the obscure Latin which distinguished this Langley from others of the same family name."

I was piqued at my friend's scepticism about



this district—a district of early cultivation, where grassy lanes, or paths across rich corn fields, lead to quaint farm-houses of many gables, overshadowed by majestic elms shutting the farm in with its snug orchards. A district of abundant population in old times; for bells do knoll to church from many an ivy-mantled tower—from Langley, Upton, Iver, Horton, each within an easy walk of the other. A district which the enthusiastic Countess who dwelt at Richings, describes as coming “nearer to my idea of a scene in Arcadia than any place I ever saw.” A flat Arcadia, certainly; and the modern Arcadians have too remorselessly lopped and trimmed the hedge-row elms near Richings, since the days when Pope and Addison, Gay and Prior, cadd’d verses upon the carved bench amongst the trees which Bathurst planted. Nevertheless, though the Arcadia be somewhat damaged, the most ruthless spirit of utility cannot wholly spoil nature; and this district has peculiar features of homely beauty, which like those of many an unobtrusive human face improve upon acquaintance.

All honour to those industrious men who have piled up our County Histories, folio upon folio. The four massive volumes of the History of Buckinghamshire, by George Lipscomb, may give me what I seek. Behold! Langley Marish, or Maires, is said to have derived its name from Christiana de Mariscis, who held this manor in the reign of Edward I. Is not “Marsh” a misnomer?

A County History, with its tombstone information, affords its own sober enjoyment. It is busy idleness to doze over its records—pleasanter even than the sweet do-nothing. No passion is roused, no prejudice is stirred, when I learn from Lipscomb that in 1626 (2 Car. I.) the king by patent granted the manor of Langley Marish to Sir John Kedermister, and dame Mary his wife; that the manor-house, originally built by Sir John, was pulled down in 1758, and rebuilt by Spencer, Duke of Marlborough; that the family of Kedermister founded the Church of Langley—a parochial chapel subject to Wyrardisbury; that Sir John Kedermister erected here an alms-house for six poor persons; that the family monument of the Kedermisters is on the north side of the chancel. Here is a fact more interesting to me than the description of that family monument: “The will of Sir John Kedermister, dated February 22, 1631, contains the following passage—‘And concerning a Library which I have prepared and adjoined to Langley Church aforesaid, for the benefit as well of ministers of the said town and such other in the county of Bucks as resort thereunto, I do appoint that those books which I have already prepared be there duly placed together with so many more as shall amount to the sum of twenty pounds.’”

In 1631, Sir John Kedermister had prepared and adjoined his library to Langley Church. His will provides for additions to the existing books. They were “for public use,” as Lysons interprets the will; but with an express injunction that no book should be ever taken out of the library.

This extract from the Prerogative Court of Canterbury raises my curiosity. What books shall I find in the Library adjoined to Langley Church—a distinct building at the south-west angle? Worthy Sir John Kedermister evidently contemplated some wider diffusion of learning than was provided for in the parochial libraries of the century which succeeded him. The statute of 1708, for the better preservation of such libraries founded by charitable contributions, says, “in many places the provision for the clergy is so mean that the necessary expense of books for the better prosecution of their studies cannot be defrayed by them.” The clauses of the statute show that the parochial library of the beginning of the eighteenth century is for the exclusive use of the minister or ministers of the parish—the incumbent and his curate. The Act is not very confiding; for its express object is to compel such regulations as shall “preserve the books from embezzlement.” Disappointing will be the search of the bibliomaniac who may expect to find treasures in the relics of such parochial libraries. They are generally contained in a worm-eaten chest of the vestry. You plunge into dust and mildew when the sexton lifts up the lid, painfully—for the hinges are broken; and there sleep some fifty volumes of controversial lumber, that indicate pretty clearly whether the parson and his charitable friends of the reign of Anne were of High-church or Low—were believers in Divine Right or in the Act of Settlement.

A venerable church is this of Langley—with restorations in good taste. Beautiful, as well as spacious, is its churchyard. The low-roofed parsonage—a primitive cottage, such as George Herbert would have rejoiced in—is on the west. The south and the north are enclosed by the solid brick alms-houses of Sir John Kedermister, and by another alms-building of a later foundation, but equally massive. The churchyard itself is a very “garden of roses.” The cluster-rose and the China-rose climb over the railings of the well-preserved tombs. The one yew, of six or eight centuries’ growth, is decaying amidst scores of rose-trees, the grafts of the last six or eight autumns. The wearied labourer, and the giddy schoolboy, pass reverently by these rose-trees, and touch not a flower; for some they recognise as tokens of love, and every tree that sheds its rich June blossoms over the grassy mounds soothingly whispers “all must die.”

But the Library. In the southern alms-houses I find its guardian—one of the six poor persons who there dwell, and have each a weekly half-crown, through the bounty of the Library’s founder. There is no difficulty in obtaining admission. The neat and good-humoured dame unlocks a door in the southern transept, which the records call “a particular aisle dedicated to the family of Kedermister.” I step into the family pew of the lords of the manor of Langley, which is also the entrance to the Library. A curious structure is this elevated pew—shut off from the body of the church by a screen of carved lattice-work. Brief Latin sentences of scriptural admonition encompass the frames of the latticed door and windows; and fill every other vacant space

where a text from the Psalms or the Gospels can be inscribed. The Great Eye that looks upon all in heaven or earth is here attempted to be represented, wherever the humbled eye of the worshipper is turned. On the pupil of that eye we read "Deus videt." At the east end of the seat are the coats of arms of the manorial lords from 1540—three generations of Kedermister; Henry Seymour; Spencer, Duke of Marlborough; Robert Bateson Harvey. The Kedermister monument in the church indicates a prolific race at one period. Under the kneeling figures of one lord and lady of the manor, nine small sons and daughters kneel. Under the corresponding figures of the other half of the tomb, is another pair of parents, with their miniature progeny also beneath them. But the race dies out. Other lords and ladies sit in that quaint pew—antique memorial of the perished dignity of a great family, thus raised above their humble tenants, even in their approach to that Throne where there is no gentleman-usher to settle questions of precedence. The yeoman, and the yeoman's wife, saw the velvet and lace gleaming through the screen, but might not see whether sleep or devotion prevailed in that grand mysterious seclusion. Be that as it may, their good works survive them, and "smell sweet and blossom in the dust."

I pass through this wondrous family pew, and find myself in a tolerably spacious room, of a very singular character. This is the Library "prepared and adjoined to Langley Church." Five presses, enclosed with panelled doors, line this room. The doors are painted, outside and inside, in various styles of ornamentation—escutcheons, trophies, small figures of apostles and prophets. The figures—in which we recognise the traditional forms which some of the great masters have handed down from the middle ages—are rather coarsely painted; but they are dashed in with a freedom that might not be unworthy of the hand of some minor Flemish or Italian artist, who came to England, as Tempesta came, to paint landscapes and groups upon the wainscoting of great houses. It was a fashion of the day of Charles I. The effect of the coloured panels of this library is not out of character with the purpose of the room. The Great Eye here, also, looks down to help and to admonish. Behind the ornamented doors, stand, in their proper numerical order, long files of folios, ranged shelf over shelf—well-preserved, clean. Crabbe has described the externals of such a collection:—

That weight of wood, with leathern coat o'erlaid;  
Those ample clasps, of solid metal made;  
The close-press'd leaves, uncoloured for many an age;  
The dull red edging of the well-fill'd page.

It is a brilliant morning, this last of June. I am alone in this antique library. I gaze upon the great shield of arms over the chimney, in a frame adorned with paintings of the four cardinal virtues—Prudentia, Justitia, Temperantia, Fortitudo. I read the catalogue of the books, written on vellum, which hangs on the wall:—"Catalogus Librorum Omnium in hac Bibliotheca—April, 1638." What curious volume shall I take down from its seldom-disturbed resting-place? Not one

of the Greek or Latin classics is here; there is only one secular English writer. It is essentially a library for divinity scholars. Here is a large part of the armoury of the great controversialists of the sixteenth and seventeenth centuries—plain names in this catalogue, without any saintly prefix even to the greatest of the Fathers of the Church. Here I find Ambrose, Anselm, Aquinas, Athanasius, Augustin, Basil, Bede, Bellarmine, Bernard, Bonaventura, Calvin, Chrysostom, Clement of Alexandria, Cyprian, Epiphanius, Erasmus, Eusebius, Gregory, Hilary, Irenæus, Jerome, Lactantius, Luther, Origen, Philo-Judeus, Tertullian. Very few Anglican divines—Andrewes, Gervase Babington, Willets, Williams. A book or two of medicine; and, more valuable than folios before the days of Harvey or Sydenham, the "Pharmacopolium" of Langley Manor House, inscribed with the honoured names of John and Mary Kedermister, 1630; the Family Receipt Book, the written wisdom of choice directions for the kitchen and the still-room; the kitchen on which the lady of the manor-house looked down from her private closet upon the hind turning the sirlain before the mighty wood-fire; the still-room, whither she retired with her favoured housekeeper to superintend the preparation of more potent remedies for fever and ague than many of the subtler combinations of the modern Pharmacopœia. I could not find on the shelves this bequest to posterity. Perhaps posterity did not appreciate it, and it is removed from profane eyes. Did the contemporaries of Sir John Kedermister appreciate his truly noble endowment for the cultivation of ecclesiastical learning? The vicar, perhaps; some of the clergy of the adjoining villages, perhaps. (Eton had its own library in this time of the provostship of Sir Henry Wotton.) Were there many "other in the County of Bucks" that did "resort thereunto?" Out of the green valleys of the Thames did many ride to Langley to read and muse? Did reverend travellers come here from the distant beech-clad Chilterns to find the rare book that would give them matter for some of the disputations treatises with which that age was flooded?—to borrow eloquent sentences from Chrysostom, or subtle arguments from Aquinas? Were the saddle-bags often taken off the wearied nag, and did parson and horse rest for a night or two at the ancient hostelry of the Red Lion, on the west of the churchyard—the divine hoping that he might, peradventure, be asked to dine at the steward's table in the great manor-house?

What a delicious place for study! The solemn yew shuts out the glare of the noonday sun from these quarried windows. A place for study—and for reverie. I take down, in a dreamy mood, the four folio volumes of "Purchas, his Pilgrimage." I turn over the pages that used to delight my boyhood—those marvellous explorations by land and sea which this laborious old compiler got together with so much taste and judgment. I look at his pilgrimages in India. I light upon the high turrets of Agra, "overlaid with pure massie gold." In the chapter upon "the Magnificence of the Great Mogoll," I see the gorgeous despot, covered with "huge gems"—diamonds,

emeralds, pearls, rubies. I see fifty elephants, with turrets of gold, bearing ladies looking through "grates of gold wire," canopies over them of "cloth of silver." Jehanghir is giving audience. I half unconsciously repeat:—

High on a throne of royal state which far  
Outshone the wealth of Ormus and of Ind,  
Or where the gorgeous East with richest hand  
Showers on her kings barbaric pearl and gold.

I turn to "The Holy Land Described"—Jerusalem, Emma, Bethlehem, Sinai . . . Let me think. Can He have conversed with these suggestive Pilgrimes in this solitary room? He, who old and blind, ceased not "to wander where the Muses haunt,"

but chief

Thee, Sion, and the flowery brooks beneath,  
That wash thy hallow'd feet and warbling flow.

And why not? He who wrote *L'Allegro*, *Il Penseroso*, *Lycidas*, *Comus*, *Arcades*, wrote them in his father's house at Horton, within little more than two miles from this spot. From 1632, after Sir John Kedermister founded this library, to 1638, when that broad vellum catalogue was hung upon these walls, John Milton could walk over here through pleasant fields, and pass sweet solitary hours in this room.

I came again to this ancient library, having looked meanwhile at Milton and his biographers.\* I came with a new feeling. The local associations connected with his seven years at Horton were familiar to me in my own youthful time. This passing fancy renews them—all with memories of happy hours when I strolled upon the banks of the Colne,—his

daily walks and ancient neighbourhood.

I sit upon one of the high-backed carved chairs of the days of James I. Why should not the fair-haired young man have sat in this high-backed carved chair, when, having left Cambridge, he came, as he records, to dwell "at my father's country residence, whither he had retired to pass his old age?" In that house," he continues, "I, with every advantage of leisure, spent a complete holiday in turning over the Greek and Latin authors." He sometimes exchanged the country for the town, either for the purpose of buying books, or for that of learning something new in mathematics or music. He was irresolute during the earlier portion of his sojourn with his father at Horton, as to the especial dedication of the intellectual power of which he was conscious. He had not altogether matured his resolution not to become a minister of the Church. He might still pursue the study of the old theologians as a preparation for future duties; we know how accurately he must have studied them for controversial purposes. In the days before he had made up his mind that "he who would take orders must subscribe slave," a friend at Cambridge had admonished him that the hours of the night pass on, and that the day with him is at hand, "wherein Christ commands all to labour while there is light." To that friend he sends the "Petrarchian stanza," the autobiogra-

phical sonnet, "On his being arrived at the age of twenty-three." One might be almost tempted to indulge the fancy that, musing in this Langley library amongst these three hundred folios—not altogether dreading the fate of him that "hid the talent," but yet having compunctious fears that his "late spring no bud or blossom show'd,"—he might see the emblem upon the wall benevolently regarding him who prayed for grace to use his lot—

As ever in my great Task-master's eye.

To such a mind, even when not forming itself for the sacred calling, but "pluming its wings and meditating flight;" seeking for "the idea of the beautiful, through all the forms and faces of things;" there would be attractions in some of these venerable teachers which would amply repay young Milton for a morning walk from his own Colne to the upland hamlets. He knew each lane and every alley green—each dingle or bushy dell—every bosky bower. The ploughman whistles, the milk-maid sings, the mower whets his scythe. He crosses meadows trim with daisies pied; he looks upon the towers and battlements of Windsor, bosomed high in tufted trees. The cottage-chimney smokes, the tann'd haycock in the mead waits for the unloaded wain. He is at length seated in the quiet room adjoined to Langley Church; he is seated, as he describes his old tutor, Thomas Young—

Turning page by page, with studious look,  
Some bulky father, or God's holy book.\*

The sun is westering. The book at length is closed, for the dim religious light is growing more dim. He has been dwelling with the cherub contemplation, and has forgotten time. He moves homeward through arched walks of twilight groves. Cynthia is rising gently o'er th' accustomed oak. He lingers the woods among, to listen if Philomel will deign a song. He rests on a plot of rising ground to hear the far-off curfew. Father and mother welcome the pale student—the father, to whom he poured out his gratitude for this home. Thou

led'st me far away  
From city din to deep retreats, to banks  
And streams Aonian, and with free consent  
Did'st place me happy at Apollo's side.

The paternal home in the village of Horton is gone. Its very site is doubtful. Forty years ago I believed in an apple-tree which grew, or rather decayed, in the traditional garden of Milton. Nothing distinctive is left of him or of his family but the blue stone in the chancel of the church which covers the remains of "Sara Milton, the wife of John Milton, who died the 3rd of April, 1637." The young man who mourned for his mother did not long remain at Horton after her death. Early in 1638 he went abroad. The aspect of the fields on which we may track his footsteps has greatly changed. The smart villa here and there has taken the place of the yeoman's homestead; but still the sweet-brier or the

\* The elaborate and elegant "Life of John Milton," by David Masson, supercedes, as far as it has gone, all previous biographies. The volume already published reaches to 1659.

\* Forſitan aut veterum preſentia volumina patrum  
Verſantem, aut veri bibula ſacra Del.  
Eius. IV. (The translation is Cowper's.)



vine at the cottage window bid good morrow. The Colne still flows through willow banks. Still, but somewhat rarely now,

Young and old come forth to play  
On a sunshine holiday.

Such a holiday was anticipated by the side of the Colne, on Queen Victoria's coronation day of 1859. There was a holiday, but no sunshine. On that day the new Public Rooms of Colnbrook were to be first opened—of Colnbrook no longer hated by outside passengers on fast coaches for its rough pavement, but now a quiet village street. The rain poured down. The jocund rebecks were mute. There was no dancing in the chequered shade. But there were speeches in the new building from men of rank and zealous clergymen, who came there to aid the desire of the tradesmen and farmers and mechanics of this district to have a place of intellectual resort—a news-room, a lecture-room, a concert-room, a library. That library has no broad foundation of ancient learning like its neighbour of Langley. A hundred or two of cheap volumes well-thumbed, sent about from subscriber to subscriber—no magnificent folios, never to be taken out of the room provided for them. But the inerudite readers of this humbler institution have fountains of knowledge which were not unlocked even for the young scholar of Horton, who wrote to Diodati, in 1637, "Where I am now, as you know, I live obscurely, and in a cramped manner." Great questions were stirring the heart of England. The indications of vast social changes were agitating all thoughtful men. "I want," he said, "a more suitable habitation among some companions." He pined for the talk of London—for its news. He wanted to learn there something more than mathematics or music—something that belonged to that exciting time of conflicting opinions. Hampden had refused to pay ship-money, and the great case was to be solemnly argued before the judges. The Star-Chamber had cut off Prynne's ears. Scotland had declared against episcopacy. What a time for a young man, burning with enthusiasm about the rights which a high-spirited nation claimed as its inheritance—what a time for him to learn nothing of the outer world, but from the meagre "Weeklie News" of Nathaniel Butter, which every now and then the Licensor suppressed! The subscribers to the Public Rooms of Colnbrook can watch every pulsation of the great heart of English life, day by day, almost hour by hour. The wondrous agency of the newspaper has made us a nation "apt to learn;" and when the newspaper satisfies the daily curiosity, emulation is roused even in the imperfectly educated, to search in books for knowledge of which the newspaper opens the long vista in the hitherto dense woods. But upon such old foundations as that of Sir John Kederminster's library, has whatever is noble and enduring in letters been raised. Let us never forget when we look upon ancient learning thus entombed—with whatever departments of human knowledge such volumes deal—that "Books are not absolutely dead things, but do contain a potency of life in them, to be as active as that soul whose progeny they are: nay, they do preserve, as in a vial, the

purest efficacy and extraction of that living intellect that bred them."\* CHARLES KNIGHT.

### CANDLE MAKING.

It must be a very young man who does not remember that most noisome invention—the mould candle, accompanied by its still more noisome companion—a pair of snuffers; and yet how should we stare, if on the table of the most modest household they should again appear. Indeed, they seem as much a thing of another age as the flaring flambeau and its rude extinguisher, which may yet be seen suspended from the scrolled iron-work about the doors of old family mansions. This light of other days sprang directly out of the domestic grease-pot: its manufacture was a rude, not to say disgusting handicraft, and if anyone had been bold enough to say that one day a new light would arise, that would materially affect the destinies of a whole people, Bedlam would have been thought his proper destination. Yet this seeming dream of delirium has come to pass; and the production by negro free labour of palm oil, now so largely used in the manufacture of soap and candles, has greatly assisted in giving a check to the slave trade.

Noticing the other day the extraordinary pile of casks incumbering the wharf of Messrs. Price and Co.'s Patent Candle Company at Battersea, we could not help looking upon them as so many dumb missionaries ever circulating between England and the Gold Coast of Africa, spreading civilisation and religion over the latter hitherto benighted region. And the introduction of a new commodity for the supply of a common want, has again re-acted favourably on the labour of the particular trade to which it refers. Instead of the Chandler's shop, where the simple process of melting refuse animal fat alone engaged the intelligence of the workmen, we saw in this establishment a vast laboratory, and in place of mere mechanics directing the works, a practised chemist availing himself of the last word of science and the best products of mechanical skill. Instead of the grease-pot or the beeswax cake comprising the whole repertory of the trade, the museum of the establishment sets before our eyes the products of a hundred climes, which may be ranked among the raw materials of the manufacture.

The animal, vegetable, and mineral worlds are laid under contribution for the same end. The Shea Butter—butter of Abyssinia—a vegetable product first mentioned by Bruce; petroleum of Ava, a mineral; the beautiful insect wax of China; the cotton pod, which yields the last new light of America; the hundred-and-one nuts of tropical climes; and even the fat of the tiger, may here be seen, proving that the efficient production of even so insignificant a thing as a candle necessitates a knowledge of a large range of sciences, and includes within its grasp not only the contents of the grease-pot, but the analogous products of the whole world. The process of manufacturing candles, as carried on at the works of Price's Patent Candle Company, which we propose briefly to describe, is one of the most

\* *Arthropogitica*.

interesting sights in London. The two establishments are known as Belmont, at Vauxhall, and Sherwood, at Battersea, and the huge corrugated iron roofs of each are doubtless well known to the reader who is in the habit of passing frequently up the river. The manufactory at Sherwood is by far the largest; indeed, at Belmont little more than the production of night-lights and the packing of the manufactured goods is proceeded with. At Sherwood the works cover twelve acres of ground, six of which are under cover; and to this establishment we wish to carry our reader. The raw materials principally used in this manufactory are palm oil, cocoa-nut oil, and petroleum; the first, however, is used in by far the largest quantities, and to its preparation for the manufacture of candles we shall first draw attention. Palm oil, as imported, is of a deep orange colour, of the consistency of butter at midsummer; hence it will not flow out of the cask like the more fluent oils; and to assist this costive tendency—the first care of the manufacturer—the following plan is pursued: the casks of oil, as they arrive from the docks, are transferred to a large shed, the floor of which is traversed from end to end with an opening about a foot wide, which is in communication with an underground tank. Over this opening the bung-hole of each successive cask is brought, and the persuasive action of a jet of steam thrown into the mass speedily liquefies and transfers it to the underground tank. Herefrom the oil is pumped by steam power to what may be called the high service of the establishment, gravitation being sufficient to make it carry itself to the distilling-rooms. Palm oil and all animal oils are made up of three elements—a very hard body, called stearic acid, a liquid termed oleic acid, and a white syrrupy body, which acts as a base to the other two. Now these three companions agree admirably in nature, but the moment art attempts to convert them to her own purposes in the formation of candles, a little difficulty arises—the glycerine turns out to be the slow man of the party; like many good men and true, its illuminating power is found to be greatly deficient to that of the company it is in, and hence its ejection is voted by the scientific candle maker. Not long since this was performed by the process termed lime saponification. By this method cream of lime was intimately mixed with the fatty matter to be acted upon, and the principle of chemical affinities coming into play, the different ingredients, like the dancers in a certain coquettish waltz, forsook each other for new comers: thus the stearic and the oleic acids waltzed off with the lime, leaving the glycerine by itself, dissolved in tears—the resultant water. No sooner, however, was this arrangement completed, than it was broken up by the introduction of strong sulphuric acid, which in its turn waltzed away with the lime, leaving the fat acids free. This was an expensive process, however, inasmuch as, independently of the cost of the lime and sulphuric acid, the stearic acid obtained was comparatively small in quantity, and the whole of the glycerine was wasted. The next step in the process is known as the sulphuric acid saponi-

fication, the fat acids being exposed to sulphuric acid at a temperature of 350° Fahr. By this process the glycerine is decomposed, the fats are changed into a dark, hard, pitchy mass, the result of the charring of the glycerine and colouring matters—its final purification being effected in a still, from which the air is excluded by the pressure of super-heated steam. In 1854, this process was brought to its present perfect state by passing this super-heated steam directly into the neutral fat, by which means it was resolved into glycerine and fat acids, the glycerine distilling over in company but no longer combined with them. This was an immense step gained, inasmuch as the glycerine thus for the first time obtained pure, and in large quantities, was raised from being a mere refuse product which the candle-maker made every effort to destroy, into a most important body of great use in medicine and the arts; indeed, like gutta-percha, or vulcanised India-rubber, it is no doubt destined to play a great part in the affairs of the world, and is far more valuable than its companion bodies the stearic and oleic acids. In the chemical laboratory little episodes of this kind are continually occurring,—the rejected, despised, and unknown refuse, being often led forth at last as the Cinderella of science. We may here mention that it is the presence of this very glycerine in the old mould candle, and in the still existing "dip," which produces the insufferable smell of the candle-snuff. A candle when blown out, exposes the smouldering wick to the action of the atmosphere, and the glycerine distils away in the smoke. Yet here we see as much as six tons distilling at one time in one room without the slightest smell, in consequence of the process taking place in a vacuum. Imagine, good reader, what would be your sensations sniffing at six tons of the concentrated essence of candle-snuff!

The two acids, the hard stearic and the fluent oleic, have still to be separated, as it is only the former which is, from its high melting point, calculated to form the true candle material. The cooled fats, forming a thick lard-like substance, having been cut in appropriate slices by means of a revolving cutter, are then by an ingenious labour-saving apparatus spread upon the surfaces of cocoa-nut mats, which are taken away in trucks to the press-room. As these pass in huge piles before you, the imagination may picture a tea-party of Brobdingnagians, and these are the countless rounds of brown bread and butter provided for the occasion. In the press-room these piles are subjected to hydraulic pressure, which slowly squeezes out the oleic acid, leaving the stearic acid behind, in the form of thin, hard, white cakes. These are remelted in a huge apartment filled with deep wooden vats, appropriate cups for the monstrous bread and butter before mentioned. The arrangement by which the melting process is carried on is novel in the extreme. Into each vat a long coil of pipe depends, which admits into the fatty mass a hissing tongue of steam, which quickly liquefies it. The use of metal boilers is precluded by the fact that, on account of the acid oil to be acted upon, silver, as in the manufacture of pickles, would be the cheapest that could be employed.



The stearic oil, or candle-making material, of the cocoa-nut is extracted simply by pressure, no distillation or acidification being required. The well-known "Composite candles" of this form are made from a combination of this oil at low melting point and the hard stearic acid of the palm oil, their relative proportions varying according to the varying condition of the price of each in the market. We have yet to speak of the production of candle material from the novel substance Petroleum, a natural product of the kingdom of Burmah, where it wells up from the ground, like naphtha, to which it bears a very striking resemblance. It is a mineral substance composed of a number of hydro-carbons, varying in specific gravity and boiling points. The preparation of this dark orange-coloured liquid is conducted simply by distillation: a number of very different products coming over at different temperatures, ranging from 160° to 620° Fahrenheit. The first product to distil is the extraordinary liquid termed *shero-dole*, a detergent very similar to benzene collas, the well-known glove cleaner, removing greasestains like that liquid, but without leaving any smell behind. A very beautiful lamp-oil, termed *Belmontine oil*, is the next product. This oil burns with a brilliant light, and, as it contains no acidifying principle, it never corrodes like other oils the metal work of the lamps. The two next products are light and heavy lubricating oils, used for lubricating spindles at a much cheaper rate than the ordinary oils now in use. The last product to distil is termed *Belmontine*, a new solid substance of a most beautiful translucent white, somewhat resembling spermaceti, and forming a candle of a most elegant appearance, very similar to the paraffine lately distilled from Irish peat. In addition to the candle-making materials already mentioned, there are numerous others, which are worked when they can be procured cheaply.

The candle-making material being now fit for moulding, let us introduce the reader to this department of the manufactory. A room, 127 by 104 feet, is fitted up throughout its entire extent with parallel benches, running from one end of the department to the other. In these benches, ranged close together in a perpendicular direction, are the candle moulds. How many thousands of these may be counted we scarcely like to say; but, viewed from above, their open mouths must present the appearance of a vast honeycomb, commensurate with the size of the room itself. Along the top of each bench, 104 feet in length, there runs a railway, and working on this railway is what may be termed a candle-locomotive—a large car running on wheels, containing hot candle material. The wicks having been adjusted truly in the long axis of the mould, the locomotive now advances, and deposits in each line of moulds exactly enough material to fill them, proceeding regularly from one end of the bench to the other, setting down at different stations its complement of passengers. After a sufficient time has elapsed to allow them to cool, preparations are made to withdraw them from their moulds. This is done in the most ingenious manner: in an apartment close at hand an iron boiler of great thickness is filled with highly compressed air, by means of a

pump worked by a steam-engine; pipes from this powerful motive communicate with every distinct candle-mould, and convey to it a pressure of air equal to 45 lbs. to the square inch, about the surface of the diameter of a candle. These candle-moulds and the air-pump constitute an immense air-gun, containing thousands of barrels, each barrel loaded with a candle. The turning of a cock by boys in attendance lets off these guns, and ejects the candles with a slight hissing noise. This fusillade is going on all over the room throughout the entire day, and in the course of that time no less than 188,160 candle projectiles, weighing upwards of fourteen tons, have been shot forth. The intelligence and care with which the attendant boys catch these fatty missiles, is accounted for by the fact that Price's Patent Candle Company rectify their labour as well as their raw material; the excellent schools established by the Managing Directors, Messrs. Wilson, enabling them to select the most careful lads for those departments requiring particular attention.

The visitor should notice particularly the wicks of these candles, as upon their method of preparation the abolition of the snuffers, that grand reform in the matter of domestic light, depends. These wicks, in the first place, are made very fine, the high illuminating power of the stearic acid enabling a fine wick to give far more light than the coarse wick of the common "dip." Again, the particular twist given to the wick when it is plaited, and the wire with which it is bound, causes it to project from the flame when burning. Palmer's candle-wicks, it will be remarked, are twisted upon each other, the relaxation of the twist as it burns answering the same end—the projection of the burning cotton through the flame and into the air, which immediately oxidises it, or causes it to crumble away, thus obviating the necessity of snuffing. Here we see an extraordinary example of the manner in which a very simple improvement will sometimes interfere with a very large trade,—the simple plaiting of a wick doing away with one of the most extensive branches of hardware in Birmingham and Sheffield.

The candles are sent forth into the market in pound packets, packed in highly ornamental boxes. The manufacture of these boxes is not the least interesting part of the manufactory. In consequence of the duty on paper, it was necessary to look about for some cheap substitute, and deal was finally adopted. A plank, one foot wide by four long, is planed into no less than 140 shavings of that size: these are pasted on one side with a very thin straw paper, so as to form the hinges for the sides. They are cut out by a machine to the required sizes, and rapidly made up afterwards by hand, the cost being truly insignificant. For the manufacture of the night-light cases, the shavings are rolled into a cylinder, pasted, and then cut off to the required lengths in a hand-lathe.

Thus much for the material lights of Price's Patent Candle Company. A subject of still greater interest, perhaps, would be the lights they are cherishing in the shape of the admirable training schools attached to this factory, to which we shall probably refer in another article.

DR. WYNTER.

### DUMB MOUTHS.

IN his work of interpreting nature, man has put tongues into a good many dumb mouths, and extracted from them surprising utterances. The chemist listens to revelations whose significance is, as yet, only partly discernible. The geologist, breaking stones by the wayside, applies his ear to a more instructive shell than the one that murmurs of its ocean home. And other interpreters are similarly busy, fitting, with more or less ability, tongues into orifices previously silent. Yet, strangely enough, the dumb mouths of our species may be rendered almost eloquent, while less is known of the processes adopted in the workshops where true human tongues are found for them.

It is not a very long time since workshops of this kind were instituted. Before their establishment, deaf-born children grew up amongst hearing playmates, like the tare in the midst of good grain, which it resembled in its early stages, but from which further growth showed its dissimilarity.

A child, who hears, very soon imitates the sounds made to him by his nurse and others. From finding that particular sounds are made on particular occasions, he learns to connect meanings with words. By and by, as his stock of words and phrases increases, he becomes aware of increasing resemblances betwixt things. More hidden resemblances are pointed out to him, and gradually he comes to find that the limited experience of his own life serves as a set of recesses, into which language fitting keys, he can wander at will among things present, past, and future, and, practically, have the benefit of all men's thoughts.

Not so with the deaf-born child. Emotions excited in him by their proper stimulants pass over his mind like ripples on a lake, but are confined within himself by the boundary line, so to speak, of his deafness. Like winds blowing where they list, moods and impulses sweep across him, but he cannot tell whence they come nor trace whither they go. He cannot compare sensations with other children, and thus be drilled into certain prevalent habits of thought, according to which the people round about him live and move and have their being. His deafness is like an envelope that entirely wraps up his mind, so that language, which is the instrument whereby the minds of persons who hear correspond with one another, has no effect on him.

An ingenious writer represents the human body as a tenement occupied temporarily by a soul which will vacate the premises on certain mishaps occurring. He describes his clay investment as "the house I live in." One might not inappropriately conceive of a deaf mute as the inmate of a prison rather than a dwelling-house rightly so called. From the grated window of his tower he looks out on life, and sees a perplexing phantasmagoria, but what it is all about he has no more notion than he has of how the tower he is in came to be there, or how he came to be in it.

How to put a tongue into the poor dumb mouth of a human being thus conditioned, is one of that bright cluster of discoveries that blaze away like



stars right above our own times. Occasionally, during centuries back, some intellect of first magnitude would shut itself up with a deaf and dumb child, as the prophet shut himself up in his chamber with the deaf son of his hostess, and in due time present to the world an awakened intelligence with animation in its looks, and a story of its own to tell—whereat the world marvelled greatly, and went its way. But clever men did all sorts of freaks in those times. To sit down, however, steadily, and make it the business of one's life, one's mission—in fact, having gathered together into a school a number of deaf mute children, to do by them, in such sort as might be, what the regular schoolmasters did for other children,—was a stretch of caprice they did not venture upon. Instances of tamed leopards had been heard of, but nobody on that account thought of civilising the desert. Why, then, because sometimes single mutes had been made rational, should outrageous eccentricity insist on trying it on with an assemblage of them?

Happily the case is altered now. Most of the very large towns in England possess schools of this kind, the managers of which are but too glad to make their methods known. Let us suppose we have just entered one.

We are struck in a moment by the extraordinary quietness that prevails. This, at first, has a somewhat chilling effect, but the bright faces round about soon dissipate the feeling. There is abundance of activity and bustle, too, for that matter, but the ominous absence of all speech keeps obtrusively in recollection that we come to see deaf mute children.

Our attention is first directed to two little boys, who have been at school a week. They are of the ages respectively of seven and nine years. We find that conductors of this kind of school (the conductors of this particular school, at any rate) have their own notions as to bending of twigs early in the hope of securing upright growth—into which notions we cannot enter here. The nine years' pupil, on the ground of his years, is thought to promise best. As yet, however, his main activity displays itself in watching new faces that enter the school. On all such he keeps a close eye. His seven years' co-mate parcels out with more equality his attention among all the various parties who are in the room, children, teachers, and strangers, glancing over all and sundry with the restlessness of a ferret, or a revolving light on its tower. It would task a good imagination to find out the thoughts that hide, like truth in her secluded wall, at the bottom of that brisk, incessant eye.

Some pupils of the same class, who have been a few months under instruction, can write names of common things. We are told to show some object. We point to our hat, the three letters composing which word a little girl immediately writes on her slate, and then, with evident pride, hitches herself erect on her seat, and smartly pats the top of her head, to indicate that the three letters refer to the object worn there. She then leans forward and touches it in our hand.

"Here, then," observes the master, proasing a little, "is a manifest beginning, an undoubted

connection established betwixt a set of meaningless characters called letters, and certain meanings which it is agreed these marks shall represent. For in this power of associating thought with things (in the present case with written characters), lies our ability to apprehend what is in the minds of other people, and generally to derive all those advantages which the use of speech brings. The fact is, that speech, as we possess it, is so perfect an instrument, that, like sunlight performing its multiplicity of offices, we cease to look on it as a piece of mechanism. It rather, like one of our limbs, seems an inseparable part of us, the absence of which is simply inconceivable till it occurs."

"Quite true," we observe, not clearly seeing his drift, and very much at a loss for some suitable remark.

"You remember," he continues, "Dean Swift's humorous story of the philosophers in Laputa, who carried about boxes of pebbles, selections of which, grouped according to known patterns, formed sentences and superseded speech. Two persons talking, merely unsling their pebble-boxes, searched among the contents for certain small stones, which they arranged so as to indicate whatever they wished to say, and then, having finished their conversation, shut up and trudged on again; like two ships at sea signalling, or may I not say like two ordinary human beings whose memories are their pebble-boxes, and for whom spoken words serve as the pebbles."

"Very ingenious," we admit, conceiving that such an admission on our part is looked for.

"Over here," proceeds our informant, going to another part of the schoolroom, "are the more advanced pupils. Their pebble-boxes, you perceive, are getting filled. The little girl we saw just knew some names of common things. She can, so to speak, select a particular pebble to represent a particular object. But all her pebbles are of one kind. In this class, however, you see round pebbles that designate things, square pebbles that show qualities, triangular that denote actions; and pebbles of various other shapes, sizes, and colours, necessary to be used on occasions sure to arise. In drilling the children into the use of such pebbles—or as this is not Laputa, but an English schoolroom—of common English words, lies our work."

"I see well enough how you begin," we remark, desiring now to select information, rather than have it in the lump; "but how with something that you cannot show? How, for instance, would you inform them that *tea grows in China*?"

"They see the country round about them. They know, or can be made to know, that by continuous walking, or progression after some other mode—as riding or sailing—they still come to some new place, colder or hotter than where they are, with clear or clouded skies, with plants many or few, and otherwise with differences from what is around them, which may be easily enough explained. Of varying heat and cold they have experience, of changes of weather, of herbage stunted or luxuriant, &c. Alterations of such nature they see or feel as they walk about, or as the seasons move on. China, then, I say to them,



is a place to which after sailing many many days a ship comes. Here is the ship's track on the map. The men and women there dress according to this pattern which I show. The skies the people see are so and so. Their fields are thus and thus. Their houses are built in this style. In that land the tea we use is got. The fact of tea being the leaf of a plant, prepared after such and such a fashion, can form no difficulty which you cannot easily conceive removed by reference to plants within reach."

"Analogy, then," we observe, satisfied with our light, "is your main dependence. You show how the things and persons they know resemble or differ from those you desire to teach them about. Now, what do you do with all these children when they grow up?"

"Oh, as to that," he adds, in a changed voice, as if dismounted from his hobby, which was evidently the schoolwork, "they are fit for most of the common handicraft employments by which men make a living. It is sometimes difficult to get one apprenticed, undoubtedly; but a fair proportion of them afterwards do well, and support themselves creditably."

"Deaf persons are very eccentric, are they not?" we inquire.

"As how?" he asks.

"I have heard very curious stories of them," we reply, "as to their inquisitiveness, and odd ways they take to gratify it. I have been told, too,

that they prefer their condition, and would rather not be made to hear."

"Ask one of them," observes our Mentor.

The question is written—"Whether would you be made able to hear or remain deaf?" In a moment the boy underlines the words—*able to hear*.

"The fact is," the master proceeds improving the subject, "that deaf human beings are very similar to others, liking what people commonly like, and disliking what is commonly thought irksome. Now and then odd tastes may show themselves, but whatever is odd—whatever departs from the common standard by which we regulate preferences and aversions—is exceptional. If a deaf person prefers deafness, his case, to say the least of it, is singular. I never knew or heard of an instance of the kind, and can more easily imagine a mistake as to the spirit (for deaf persons are not devoid of drollery), in which a preference of the sort was expressed, than gravely accept your statement that in a deaf person taste so manifested itself as a fact to be reasoned from."

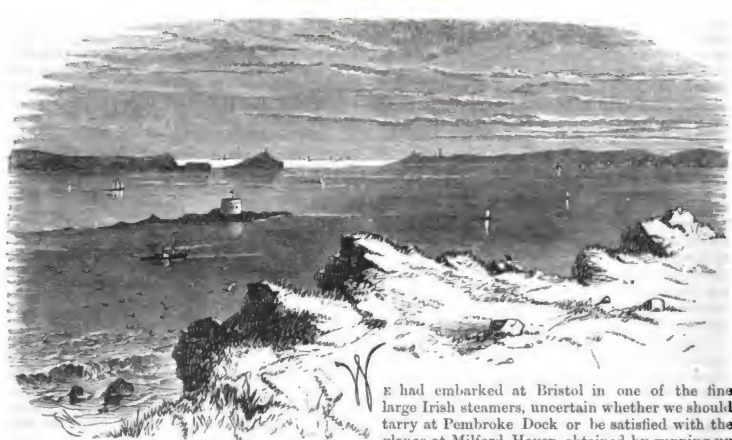
"What number of persons now in all England may be deaf and dumb?"

"Speaking in round numbers, ten thousand."

Surely a class of schools which essays to put into ten thousand poor dumb mouths an available substitute for the speech we with reason prize so much, constitutes a section of England's educational apparatus deserving proper recognition. May its work prosper!

JOHN CLYNE.

### MILFORD HAVEN.



and down it on our way to Waterford, thence to explore the beauties of southern Ireland. The day was gloriously fine; and though on land quite equal in heat to the Bahamas, yet stationed on the bridge which spans the huge paddle boxes, and meeting the fresh westerly breeze blowing right in our faces from the Atlantic, we were in no need of shelter from the sun's rays. It was late in the afternoon when, hugging the shore to keep in the slack of the tide, we ran past Govan

Head, the chief promontory of the coast, midway between Tenby and the mouth of Milford Haven, where, if there be a sea running anywhere in the Bristol Channel, it achieves the nearest approach to "mountains high" of which that shameless exaggeration of phrase admits. If the wind blows anywhere it usually storms here.

"There lies the Amelia," said our skipper, pointing to an ugly black spot close in shore. "She went down there after striking that rock in a fog, so thick you couldn't see your bowsprit; and there she must lie, for they cannot raise her."

This Amelia was a Bristol steamer, lost last year. A lighthouse is needed here. There is none between Caldy Island and St. Anne's Head. If a brilliant light were lit in these heavy fogs it would suffice to warn ships of their immediate peril when close in shore, and enable them to correct their course. The coast from hence to Milford is full of dangers, apart even from the Stack and Crow rocks; and the Trinity House ought, least of all, to economise its luminous offices on this great western inlet to England.

The storms which rage and beat on the bluff face of the perpendicular cliffs which fringe this iron coast have worn and bored them into the most fantastic shapes and chasms conceivable. They form for miles the sea margin of the large estates of the Lord of Stackpole, Earl Cawdor. They revel in rocky hideousness, and startle you at each step with some ragged peak or cavernous gulf, more wild and monstrous than the rest. Swarms of puffins and elguis screech around you and complete the scene.

We steam on; and having passed close to that huge pile which looks like a gigantic pulpit for some clerical Triton, the Stack Rock, we shave Linney Head, and open the commanding cliff on which the St. Anne's lighthouses are built, and which forms the western horn of glorious Milford Haven. We rapidly approach the eastern cliff, and steam close round the fortress-capped rock called Thorn Island, which stands just far enough out from the mainland to allow a large ship to sail through the deep strait which severs them.

Few who witnessed the scenery of the Haven on that sunny evening will soon forget it. Sheltered by the beetling cliffs which tower aloft on either side, the placid waters of this grand estuary reposed in perfect calm. The sun was setting in its gorgeous bed of gold and crimson clouds. There was just ripple enough to break up the rose-tinted surface of the deep blue water into myriads of dazzling rubies. The Haven turns rapidly to the eastward, and the sun's setting rays shone on the broad expanse of ten miles of majestic lake, the coasts presenting grey and purple outlines of graceful undulation; and, save that there reigned around a strange stillness, a dearth of all shipping, and a most unnatural absence of the life and activity which so grand a haven seems thus expressively to invite, nothing was wanted to the perfection of this singularly beautiful scene.

To return, however, to the fortifications.

The fort on Thorn Island is the main defence of the Haven. It mounts ten or twelve guns—to a

non-military eye—perched aloft in so naked a fashion that they might be all dismounted by the first volley fired from the heavy guns of a three-decker.

The mouth of the Haven, from St. Anne's Head to Thorn Island is just two miles wide. On the former, at Dale Point, a new fortification has been recently built, and a battery of a few guns for the first time confronts the twin headland, and is supposed thus to command the entrance of the Haven. That these two little forts would be insufficient, is manifest at a glance. Every part of the mouth is navigable by ships of the burden of the Great Eastern. The only rock rises to a single sharp point, over which several fathoms of water flow at the lowest tide, and it is well buoyed. Fogs frequently prevail, so that a large fleet might sail in without being seen from either shore. Two miles inwards there is another and a miniature battery, mounting three or four guns only, built on a low rock in the middle of the Haven, where about twice as many soldiers are garrisoned. A couple of frigates might with the greatest ease run up to Pater Dockyard, which lies on the east shore about eleven miles up, and set fire to the whole of it any dark night with impunity. The only ship in the whole of Milford Haven, or anywhere within two hundred miles of it, capable of making any resistance is the Eagle, 50 guns, a coast-guard ship anchored high up the harbour. This and the little Snake (gunboat) constitute the whole of the floating defence of this vast Haven and its noble dockyards.

The "inheritance" of "this blessed Milford," as Imogen calls it, is more a reproach than a boon to us. We have done nothing whatever to give effect up to this hour to its boundless capacities for maritime commerce. Except, perhaps, Rio and San Francisco, there is no harbour equal to it in the world—certainly none approaching to it in the Old World; and yet there exists no means in any part of the Haven of docking an average-sized American liner, or of landing and warehousing its cargo! A small floating pier alone accommodates the Irish and Bristol steamers. Until these preliminaries to sea traffic are achieved, railways and inland means of transit are premature.

The little town of Milford stands about midway from the mouth to the dockyard, where the Haven ends. The water leaves about a furlong of the shore opposite to the town dry at each low spring tide, save a narrow stream which runs down one of the pills or inlets which abound on either side of the Haven. It is therefore not so well adapted in this respect for the planting of a second Liverpool as some other places on the shores; but, perhaps, taking all circumstances into account—especially the fact that it will be quickly connected by rail with the Johnston Station, on the South Wales line—it is the likeliest point at which to open the ball.

We speedily steamed up past the dockyards to a huge buoy, opposite to the Neyland terminus. We were rejoiced to see lights in the different sheds, showing extra activity in the dockyard, where no less than eight large ships are being rapidly built

or repaired for sea; the fine old-fashioned ship, the *Howe*, 121 guns, being one of the latter.

We hired the first boat that came alongside to take us to the landing-ship at Neyland; nor were we at all surprised to see a brawny woman with her great hat, forming, as we thought, the better half of the boat's crew, for no women in the world pull a better oar or dredge more manfully for oysters than the Amazons of Milford Haven. She had come, however, on no such errand; and our

luggage and ourselves, three in number, being snugly stowed away, we gave the order to push off, when our female friend stood up and refused to let the boat proceed, until she had received a deaf and dumb child on board, who she persisted had arrived with us in the steamer. This was stoutly denied from on board, no such passenger had embarked; none such was forthcoming. I now ordered the boatman to pull away, and he proceeded to obey; but the tall woman, still standing



calmly, said, the boat should not stir. To our consternation the boatman, though pulling with all his might, could make no weigh whatever—the boat was immovable. The superstition of the people, as to the magical power of cunning women, is great; and the man's courage was evidently giving way. He probably remembered a similarly strange fact which undoubtedly occurred within a few yards of the same spot when a great launch was once about to take place. A resolute Welsh woman (supposed to be what in the North would be termed "no canny") presented herself for admittance, as a spectator, in the best seats; but was, as a matter of course, having no order, refused an entrée. She coolly said, with a haughty sneer,

"Then there shall be no launch to-day." When the ship began to run down the slips, from some perfectly undiscoverable cause she came to a sudden and stubborn halt before she reached her new element. And sure enough there was no launch that day, nor for many a day afterwards. We were more fortunate; we found means to transfer our evil genius to another boat. I, at the same time, unshipped our rudder, which had no doubt got foul of some hidden rope, and we sped merrily on our way across the ferry, to the infinite relief of our valiant Charon, and were soon under the roof of that prince of Welsh inns which flanks, with its pretty grounds, the Neyland Railway Station. J. C. S.

### RIVER SCENES IN CHINA.

TOWARDS the end of last year two sets of people were staring at each other with the utmost intensity for nearly eight weeks. To all appearance the mutual study left them mutually pleased; and, if so, the only thing to be wished is, that we could learn the precise impression made on both parties as accurately as we can on one. The one party was the population along the banks of the great Chinese river, the Yangtse, from its mouth to the group of three large cities, six hundred miles up; and the other party was the British Embassy. Six hundred miles may appear a small portion of a river which measures upwards of three thousand,

river which measures upwards of three thousand, but it is enough to carry strangers into the heart of China, where they can see the genuine Chinese people living in their ordinary way, and unmixed with such a sophisticated population as that of Canton, and of all the ports where foreigners trade and reside.

For four hundred miles up, the tides affect the surface of the vast stream, while its mass of waters keeps its way below, to the sea, for ever deepening its channel, and draining the interior of the country from side to side, after having done the



same for a part of Thibet. The ebb of the tide is so strong that, before the days of steam-navigation, the ascent of the river was out of the question, except in the native vessels. Lord Amherst's party reached the Poyang Lake, in junks, in 1816, turning thence southwards to Canton. In 1854, an American vessel, the *Susquehanna*, worked her way up to Woosoo, sixty miles above Nankin: and none but native vessels had ever passed that point till last November, when Lord Elgin and his attendant ships and gun-boats achieved a memorable voyage. They made a fine study of "the son of the sea," as the Chinese call the mighty stream, and it seems as if the untravelled citizens along the banks had made an earnest study of them.

If the inhabitants would but record their impressions in their dearly-beloved "literature," we might know, in the course of a generation or two, how the celebrated barbarians appeared in their eyes. As for us at home, it was an anxious season while our countrymen were behind the curtain which veils the interior of China; but when they came into view again, and related what they had seen, it became as evident as it always does on analogous occasions, that men are very much alike everywhere in the make of their heads and hearts, and quite capable of being useful and agreeable to each other whenever all parties desire to be so.

It must have been a wonderful day for the country-people—and for the towns-people, too—when the British squadron came in sight, round a curve of the stream, perhaps, or from behind one of the rocky islets with which its channel abounds. Perhaps it was first seen by the bonzes on the height where Bhuddist temples usually stand. The poor priests have nothing to do when their mechanical prayers are said—four times a day—but to sit and look abroad from some ledge or bench: and it is not often that one of their wretched order lights on such a chance as seeing Lord Elgin's squadron come upon the scene. First, there are the two gun-boats—Dove and Lee—approaching as the advanced guard, the white steam gushing from their cylinders at every stroke, and curling and melting in the air. They hold a steady course between the centre and the banks of the stream, where the channel admits of it, and thus seem to measure its width by keeping a mile or two apart. Then follow the three larger vessels—the *Furious*, with Lord Elgin on board—in the middle. Whether the tide is flowing or ebbing, on come "the fireships" of the strong barbarians. And they are not like the clumsy junks which roll and wallow, and lean over when anything goes wrong. The little outriders of the English squadron give warning when the water shoals, and say whatever they please by shifting their flags. They try here and there—push and probe—go round and about, talking their signal-talk all the while; and the large ships watch, listen, and obey—slacken, stop, and even turn and go back when so advised.

What a sight for the Bhuddist priests! They never before saw ships independent of wind and tide, and are half persuaded that these must be alive and rational. But when the fleet comes abreast

of their rock, and the great ships stop while the little ones explore, what a sight it is to see the chief man of the foreigners come ashore, and walk up the hill! He has an interpreter with him, and he wants to hear about the temple, and the ways of the priests. He learns why the head of one has twelve bald places, the signs of vows he has taken against twelve vices, and what the priest expects to happen to him if he breaks any vow on the list; and how he spends his time without books or business: and finally the great barbarian gives five dollars, to the astonishment of the holy group.

The news is now pretty sure to spread up the river. The imperial troops surrounding a city hear of it from their scouts, and the besieged rebels learn it from the bustle outside the walls, and look out from their forts and prepare to fire on the strangers. The peasants driving their cattle in long strings away from the seat of war, see the apparition on the broad stream, whose surface, as polished as a mirror, reflects the native rafts and boats, but breaks into ripples wherever the "fire-ships" turn. The people who are cutting their bulrush-crop in the flats rush to the banks to behold the sight; and even the opium smoker delays lighting his pipe for the moment to witness the miracle of a group of vessels ascending the strong river without a wind, and against the tide. The lime-burners appear from the quarry in the hills, and the oil-mill stops, while the crushers of the seed run to the banks, where the whole population of a village or a town, at present free from the rebels, range themselves—a vast orderly multitude—to see the strangers pass. Some have heard of these barbarians, but more have not; and when the few are set talking the most astonishing stories pass from mouth to mouth.

Will they act for or against the rebels? is the practical question. Nobody can answer it now. Is there any one who will venture to inquire the next time the fire-ships stop to rest?

Quick eyes soon discern a Chinaman acting as pilot on board the chief vessel; and from point to point of the shores it becomes known that more and more of the country people have held conversation with the strangers, and have come out none the worse from the adventure; till at last it becomes an object of eager desire to sell them food; and the folk make haste home, and collect their fowls and eggs, or go out to fish in the night, for the chance of a market in the morning.

This much we know, because this much was visible from the deck or the masthead of the English ships, with a little help from interpreter and pilot; but beyond those outward demonstrations all is dark. How far the people understand us, and what they think of us, we can learn only by an incident here and there in the experience of many weeks.

On board, meantime, impressions are gathered from hour to hour. When the channel is clear and the progress rapid, the shifting scenery is full of interest and instruction; and when shoals or perilous rocks delay the ships for hours or days, or compel the unloading of even the coal, the gentlemen of the expedition go ashore, and walk

in all directions, climb up to temples and forts, traverse villages, enter farm-houses, go shopping in towns, and exchange visits with high officials. On this side the question, therefore, we know a good deal.

There were parts of the scenery which reminded the travellers strongly of Egypt. Sometimes there was a dreamy softness about the hills like that of a sunset on the Nile. Swampy flats where reeds or grain grew tall, and where the tallest were cut for fences, or for the walls of houses, were like Egypt too; and so were the interminable strings of wild fowl. One which passed over the Yangtse was several miles long, folding and twisting so that it literally darkened the sky. Again, some parts subject to inundation, and buried under four or five feet of sand, were like the junction of the Libyan desert with the fertile ground. In Egypt the peasants cut down through the sand to form their cucumber-beds below; and in China they break up the clay subsoil and mix it with the sand for tillage.

When the flats were left behind, and the rocky hills drew close to the river to form a pass, the scenery became Scotch in its character: at least, so say the Scotchmen of the party, including the ambassador himself. Their hearts warmed to the distant hills, with a purple bloom like heather upon them; and the clefts, and the wooded hillocks, and the stretches of dark firs, with grey rock peeping out, reminding them of hunting days of old. Elsewhere there were woods reflected in the waters in all the brilliant hues of an American autumn. Here and there occurred large towns, supposed to contain hundreds of thousands of busy people, but found on entering to be mere heaps of ruins, with broad avenues grass-grown, and narrow streets choked with heaps of fallen dwellings. The war which caused this devastation sometimes came forward itself upon the scene. An army on the hills made a great waving of flags; and another army in the plain below waved other flags, so as to present a fine show; and now and then a cannon-shot was fired on the one side or the other. If any prisoners were taken their heads were cut off, the natives said: but this did not very often happen. The liveliest battle-scene seems to have been at Nanching, where the imperialists were watching the city. The rebels within the forts were foolish enough to fire on the British ships, which silenced them with the smallest possible number of replies, the effect of which was to send the rebels scampering out of the city directly into the arms of the imperialists, who were marching up. As seen from the mast-head, the scene was a curious one: the gesticulations and gambols of the advancing force, the rush of the rebels from the fortified pagoda, and their consternation at finding themselves between two foes. The British, however, were in no hostile mood, and they moved on, leaving the coast clear for a return to the pagoda, where they left the silly aggressors pouring in as fast as they had run out.

This was not the only occasion of attack from the shore. The story of the Nanking forts firing on the whole line of ships is well known through the newspapers, and need not be repeated

here. When the aggressors had received their lesson, they were all eagerness to apologise for the mistake of some foolish people, who had been decapitated. Such was the account they sent with all zeal up and down the river, and acted upon when the gunboats came down without the larger ships, and were obliged to stand in near the shore and its defences. The Taiping people, some way up the river, learned their lesson quickly—their rebel chief, our “humble younger brother,” desiring aid against the “demons” (the imperialists), and when that could not be afforded, sending down to the shore a present of two pieces of red hunting and a dozen fowls—a better offering than puffs of white smoke and hot cannon-balls.

Rebels and imperialist soldiers were not, however, the sort of people the British had most curiosity about, for they were no fair specimen of the inhabitants. A landowner with whom the travellers had some conversation thought the rebels very presuming in their claims. He said that they laid hands on everything wherever they went, as given to them by their Heavenly Father; and that they vowed, in their grace before meat, to destroy the demons, but that their Heavenly Father did not seem to think much of them, for they were “poor creatures,” and did not get on very well. It was more pleasant and profitable to make acquaintance with the people who lived beyond the limits of the war on the river; to stop and converse with such men as this landowner, and look into the peasants’ dwellings, and watch the buying and selling when the ships were taking in stores.

While the gun-boats were hunting for a channel it was always a temptation to go on shore and shoot; for the whole country was like a game preserve. Birds sprang up from under the sportsmen’s feet in places as strange as the burial-grounds which Bayard Taylor tells us of as harbouring pheasants in the grass of the graves. In the midst of a walled-town as large as Canton, but partly in ruins, Lord Elgin’s party started two brace of pheasants on a hill-side. In the regions of lakes and ponds, the wild fowl were inexhaustible, and little interfered with by the people. There were no signs of a degree of poverty which made the question of subsistence a difficulty. Game could not continually abound among a starving people, and be neglected by them, however fond of a vegetable diet in preference to meat. The chatty and good-humoured cottage farmers, who were always ready for a visit from the strangers, gave a pretty comfortable account of themselves. They said they had generally from two to three acres a-piece, and paid about a tenth part of the produce as a tax. If they worked for hire they got 120 cash (sixpence) a-day. The larger farms were known by the herds of buffaloes in the pastures, each one with a little boy on its back to keep it in order. Among this rural population, as well as in the towns, the supreme reverence is for intellectual superiority. In the house of a proprietor of three or four acres there was a tablet, in the place of honour over the door, in celebration of a brother having gained the highest literary degree, and being therefore eligible

for the highest offices in the state. The proprietor was not so distinguished, and had bought his Bachelor's degree for £35, contenting himself with this because he must have paid nearly ten times the amount for the degree of Master, besides having some sort of examination to go through. The anecdote indicates a somewhat Russian tone of public morals—a condition of public examination which needs reform.

There were hamlets in which some of the peasants found it difficult to pay the two dollars a year requisite for the children's schooling; but it was in such places that miserable men were found lying on the bare ground, in poor reed huts, with a lamp between two, smoking opium. The habit entails poverty of course; the mere opium costing fourpence a day, while the working man's wages are but sixpence. Wife and children depend on the bit of land, three acres of which were said to yield about a ton and one-third of pulse or grain annually, the value of which is forty dollars, and the tax three-quarters of a dollar. Such was the account given through the interpreter: but it seems as if there must be some mistake about the quantity of land. We can be no judges of the value of produce there, nor of the proportion of taxation; but the produce, in a country where three crops and upwards are taken in a year, must surely be larger than half a ton of pulse or grain per acre annually. It is true, where the father is smoking opium, and the children are untaught and untrained, the case is no fair specimen. The travelers admit that it was difficult to obtain clear information as to the amounts of land and produce. On the whole, though the dwellings of these peasant-proprietors were often excessively dirty, and the sins of intemperate parents occasionally brought misery on the children, the class seemed to be comfortably provided for. They had the appearance of a prosperous peasantry. One tenant of a somewhat larger farm said that he paid his landlord four-tenths of the produce of his land. The lime-burners were willing to stop for a chat, and tell their terms—selling their lime at 17s. per ton, and buying their small coal for the process at 25s. per ton. The cotton and hemp spinners were as full of smiles as the rest, and paused for a gossip; and so did the oily people who were crushing the cotton-seed in a mill. Little incidents occurred which showed that the natives were as observant of character as their visitors.

HARRIET MARTINEAU.

(To be continued.)



#### SHIP-LIFTING OR UNLAUNCHING.

"GIVE me a fulcrum," said Archimedes, "and I will move the world." We have not yet come to that point—to use matter external to the world, unless perchance meteoric iron; but we assuredly move very large things on the surface of the world, and we move them with a very unstable sort of fulcrum in its material state, but which yet by artificial means we contrive to consolidate.

"Unstable as water thou shalt not excel," has ceased to be a perfect image for the poet. A Hebrew Caucasian, hight Bramah, doubtless as much Abraham as Braham the singer was, some score years ago caught this unstable fluid, this Undine, this water-kelpie, conjured it into an iron cylinder, with a moveable piston, fitted thereto a tiny pump which practically drove with every alternate stroke of the handle small wedges of water into the mass, gradually enlarging the bulk of the mass of water and so forcing up the piston





by the accumulated power of the man's arm, till the column of solid water below became a fulcrum capable of sustaining any number of tons' weight that would not crush or burst the cast-iron cylinder itself, being commonly about three tons to every circular inch, equal to forty strong men. Such is the water-kelpie, held in a leash or collar of folded cow-hide by the cunning glamourie of one of our master mechanics, some sixty years since.

Three of these presses, two of them having rams or pistons eighteen inches in diameter, and one of them twenty inches, raised the Britannia tube, weighing, with its tackle, upwards of 2000 tons, one hundred feet high. But instead of a man's arm to work the pump—heat from food acting through human muscles—the steam engine was used—heat from coal acting through water swollen in bulk, and thus rendered expansive, at every fresh pulsation driving a fresh wedge of cold water beneath the giant rams, till by gradual increment the work was done.

And thus was a piece of knowledge accumulated for all time, convertible to many uses. Archimedes, it is said, lifted ships out of the water, and swamped them—and Roman soldiers and centurions with them—by mechanical contrivance. They probably were not very large ships. But a short period has elapsed since modern engineers have taken to lifting ships out of the water, not to smash, but to examine and repair them. A large float has huge cranes in it, which take hold of cables fastened round a vessel, and she is lifted bodily by steam power, and water is pumped into the float at one part, as a counterbalance weight, while air upholds it at the other. In the United States and elsewhere, hollow boxes of wood or iron, partly filled with water, are drawn under a vessel, and held in position. The water is then pumped out, and the pontoons by their buoyancy lift the vessel, which can then be examined and repaired.

The engineers connected with the Victoria Docks wanted to have a simple means of rapidly raising a vessel out of the water, and Edwin Clarke, one of the instinctive engineers of the day, was chosen to devise them. The ordinary construction of graving docks is an oblong space, enclosed by timber or masonry, with a flood-gate at the entrance, the sides being made to slope something to the shape of the vessel. When the vessel enters at high tide, the gates are closed, the sluices opened, and the vessel propped in position, till the water runs out to the level of low tide, when the sluices are closed, and the remaining water, if for a very deep vessel, is pumped out. In the dock the vessel remains till all external repairs are done, when the water is let in, and the vessel floats away. In this mode the dock may be occupied many days together with one vessel.

Mr. Clarke's object was to be able to raise a succession of vessels, and float them out of the dock as soon as raised; in this mode making one dock do the work of a dozen.

A row of cast-iron tubes, about five feet in diameter, were sunk vertically at each side of the basin, about ten feet apart. The mode of sinking was peculiar. Being lowered to the bottom, a man in a diver's dress was lowered inside. He dug under water, and filled pails, which were

drawn up in succession, the tube gradually sinking till sufficient depth was attained; and so on in succession with all the tubes, the tops of which were connected with a framework of iron. From the top downwards, each tube was slotted parallel to the length of the dock. In this slot was a cross-head, carrying on each side a pair of long iron links. These two links were connected with two links on the opposite side of the dock, at a distance of sixty feet, by strong wrought-iron girders. At the bottom of each column was a powerful Bramah's press, with a piston of sufficient length to carry the cross-head to the top of the tube, and with sufficient length of stroke to descend to the bottom. Thus every pair of opposite columns laid was calculated to raise two cross beams, the columns extending the whole length of the dock. The presses were worked by a steam engine, being so connected as to form three sets of lifts, each of which sets being supplied from a common stock of water worked simultaneously, so that the middle or the ends could be raised more or less at pleasure. A kind of big gridiron was thus formed, about one hundred and sixty feet long and sixty feet wide, and capable of moving up and down through a space of some twenty feet.

Upon this gridiron was placed a huge tray or square saucer of sheet iron, rivetted together, with the edges rising upwards in vertical walls, about four to five feet high. The tray was divided into water-tight compartments by cross partitions of sheet iron, similarly to a ship, and was strutted and timbered with cross-beams to keep it in shape.

A few days back the public, ladies inclusive, were called in to behold an anti-launch, with the usual paraphernalia of spread tables and the eternal champagne bottles.

The valves of the huge tray being opened, it gradually sunk under water as it filled, bearing down with it all the ram-heads with the gridiron. A craft from Aberdeen, called the Jason, light in ballast, and feather-headed with a multitude of flags, of between eight and nine hundred tons burden, was hauled by a rope forward and pushed by a steam-tug aft, till her keel ranged fore and aft over the centre of the tray, carefully adjusted by measuring-poles, while lifting and moving. The pumps were then set to work till the tray touched her keel, when a series of huge chocks were hauled by ropes and slid forward on the transoms of the tray till they formed a cradle all round her bottom. Then the rams were again set to work, and up went gridiron, tray and clipper ship till her keel stood some five feet above the water level, and captain and mates could walk round her as easily as a school of dolphins could swim round her in deep water. Then unmistakably could be seen the traces in her copper of all the rickling and straining or scraping she might have undergone.

As the tray rose, the water fell through the valves, and when clear of water the valves were closed, and then the great tray floated with Jason and his Argoey, and captain and crew, and what golden fleecery they might have, all on board. The vessel was hoisted upon the tray for public inspection as deftly as James of Buckley Square could hand up a letter.

Most frequenters of launches have observed how boats ply about, and their occupiers, with scoops and landing-nets, catch the floating tallow. Here also in this un-launch there was scope for the pickers-up of unconsidered trifles. Some half-dozen good-sized perch had got entangled in this giant iron sagine, and there were no weak meshes to burst through. The boys were after them, and old Father Thames must have been delighted to see them hold them up in triumph, incontestibly proving that he was not all poison, and inviting all anglers to try a punt off the Isle of Dogs, where there are positive live perch existing.

Now for a digression, to which the apropos will come.

On a hot evening some ten years back I waited on the pier barge at Blackwall for a boat to cross the water. Two porters were taking the coolest place they could find, and discoursing first quietly and then excitedly. At last a screw-steamer came by, and gave point to their subject, one exclaiming, "I should like to know who invented the first screw!" His companion's wit was uppermost, and he replied, "Vy Harkymeeds, to be sure." "Don't believe it," said the other; "depend on it, it was somebody behind Harkymeeds what invented it for him, and he gave it his own name." In short the porter held a strong conviction that no real inventor ever got justice done to him, but that the invention was always officially appropriated; and had his fellow colloquist given the name of the direct assistant of Harkymeeds, would have been ready to testify that it had been appropriated third hand.

As usual, speech-making followed the symposium, and a director demonstrated that the new scheme was the best and most profitable and the company the most prosperous that had as yet been devised, and thereupon Edwin Clarke came to claim the very modest merit of having taken his idea from the moving of the Britannia tubes. If a tube of 2000 tons could be lifted by these hydraulic presses, 100,000 tons might be lifted by multiplying the presses; and in the details of working out he had been helped by numerous people, directly and indirectly, moreover having a body of engineers for directors, who, from time to time, corrected any crudities. A more modest inventor never gave speech to public. He admitted the moving body behind "Harkymeeds."

And now to the *cui dono*. The tray has to be lifted as well as the vessel, but there is no water to pump out as is the case with ordinary pontoons, so the cost of coal for the two processes is about equal. But then in a graving tidal dock the water runs out without pumping. But again with the tray system, each tray may be floated away with its cargo, and one dock will serve instead of many, and a large amount of first cost and valuable space is saved; and what is more than all in time of business, the saving of time is great. Several vessels may be docked, examined, and discharged in a single tide. It is also no slight advantage to have the vessel in daylight raised above the water's level at will, so that a craft may be looked all over before going to sea to make sure of her trustworthiness. Nor does there appear to be any reason why the trays

should not be so constructed as to be as durable as the stone dock they replace. Upon the whole, the plan is very valuable, even for a tidal water. It will be still more important where there are no tides.

W. BRIDGES ADAMS.



### ORCHARDS IN CHEAPSIDE.

AND why not? We stall-feed milch cows in upper-stories of London houses, bring deep sea fishes and zoophytes under inspection in our drawing-rooms, and grow choice ferns in domestic glass-cases, and we contend it is quite as easy to pick our own fruit from our own trees in the centre of the city as from the south peach-wall of some snug country house. Our reader, of course, is incredulous, but we mean what we say, and hope, before we have done, to convince him that we speak the words of truth and soberness. The cultivation of fruit-trees in pots in hot-houses has long been practised by nurserymen in this country, in the same manner as grapes are cultivated; this process is necessarily expensive, and entails the necessity of employing highly-skilled gardeners. Mr. Rivers, of Sawbridgeworth, in Hertfordshire, was the first, however, we believe, who proposed to simplify the growing of rare fruits—such as the peach, nectarine, and apricot—so as to render their culture within the means and knowledge of persons of very moderate incomes. To grow peaches at the cost of two shillings a-piece has never been a difficulty; to grow them at one penny a-piece is a triumph, and that he has taught us all to do. In this country the production of the rare stone-fruits out of doors has always been a lottery. We rejoice greatly at seeing our walls one sheet of blossom in early spring; and then comes a day of wet and a nipping frost, as in this very year, and all our hopes are blighted. To afford protection during the few trying weeks of March and April, and to produce a temperature like the dry yet varying atmosphere of the East, the natural home of our finest wall-fruit, without delivering us into the hands of the professed gardener—with his stoves, hot pits, boilers, and other horticultural luxuries, which the rich only can afford—was the desideratum, and that Mr. Rivers has accomplished with what he terms, his "orchard-houses."

These are not the elaborate pieces of carpentry work we meet with in great gardens, but glass-houses, constructed so simply that any person of an ingenious turn may construct them for himself; they are nothing more, in fact, than low wooden-sided houses, with a glass roof. As there

is no window-framing, planing, mortising, or rebating required, the cost is very inconsiderable. A span-roofed orchard-house, thirty feet long by fourteen feet wide, with a height to the ridge in the middle of eight feet, sloping down to four feet on either side, can be constructed by any carpenter for 27l. 10s.; smaller lean-to houses for very considerably less: estimates for which our more curious reader, who may feel inclined to make an experiment in home fruit growing, will find carefully set forth in Mr. Rivers's original little work, "The Orchard-House," published by Longman. One of these houses gives the fruit grower an atmosphere as nearly as possible resembling the native one of the peach, nectarine, and apricot. The glass affords abundance of light through its ample panes, and its protection gives a dry atmosphere, in which the fruit is sure to set and come to maturity; whilst the vigour of the tree is insured by the wide openings or shutters in the opposite side walls, which admit a constant and abundant current of air through the house when it is thought desirable to do so. The atmosphere produced, beds are made, composed of loam and manure, on either side of the sunken central pathway, not for our orchard to grow in but upon. And here begins the singularity of this new method of culture. Any one who has grown fruit-trees, must be aware that their roots are great travellers: they penetrate under the garden wall, crop up in the gravel path, and penetrate into the old drains; they seek their food, in fact, as the cow does in the meadow, moving from place to place, and, like the cow, they, to a certain extent, exhaust themselves in so doing. Under such circumstances, artificial aid is of little avail, you cannot give nourishment to roots that have run you don't know where; but you can confine the roots and stall-feed them, as we do animals, with a certainty of producing the effect we desire, and this we accomplish by putting our orchards into pots.

But Pomona has still an infinity to learn. It clearly will not do to allow our fruit-trees to fling about their arms as they do in a wild state; in the orchard-house we have to economise room; there must not be an inch of useless wood. A little time since, small standard trees, about four feet high, were thought to be the best form for the orchard-house, but Mr. Rivers has come to the conclusion that most light and heat is gained by training his trees perpendicularly—in the form of a small cypress—thus a stem, four feet high, supports a large number of short lateral branches, pinched back to five or six fruit-buds. This somewhat formal shape has the great advantage of allowing a large number to be congregated together, and of ripening their fruit better, inasmuch as they are not so much shaded with leaves, as those having straggling branches. And now for the manner of feeding them. The pots in which the roots are encased may be considered the manglers of the tree; to these nutriment is given in the autumn of every year, in the shape of a top-dressing of manure, in addition to which, instead of one hole, three or four are made in the bottom of the pot, to allow the roots to emerge into the rich compost of two-thirds loam and one of manure, forming the border.

"But," says our reader, "this, after all, is but a round-about way of making the roots seek mother earth."

It may appear so, but in reality it is a very different thing. In the first place, the zone of baked clay placed round about the roots, in the shape of the pot, is a good conductor of heat, which highly stimulates the tree. In the second place, the roots, although allowed to strike into the border, are within call; when the branches are pinched back in the spring, these roots also are pruned; thus the vegetation, which otherwise would be apt to run riot and fill the house with useless leaves and wood, is checked at will. To provide still further nourishment to our nurslings, every two years the earth is picked out of each pot, two inches all round, and six inches deep, and fresh compost is rammed into its place.

Our reader will perhaps smile when he thinks of the old grey and mossy orchards of the country, with their tumble-down trees leaning in every direction, and spreading over acres of ground, and hundreds of yards of wall trees being compressed into a little glass-house, and thus made so shockingly tame by the hand of man, that they are forced to depend upon him, like barn-door fowl, for their daily nourishment; but he would smile, and that with delight, to see the town of orchard-houses in Mr. Rivers's nursery, thus filled with obedient trees, and bearing educated crops, such as no open orchard or garden ever dreamed of doing.

Trees, once potted and placed in the orchard-house, the trouble attendant upon them is not very much, and does not require any special gardening qualifications. A lady might, with advantage, relieve the monotony of making holes upon cambric and sewing them up again, by this delightful occupation. In the winter and spring months protection should be given against frosts by closing the shutters; very little water should be allowed in winter, as the trees require to hibernate, and water acts as a stimulant. About March, pruning should commence, and should continue through the season until the final autumn pruning, when the orchard is once more put to sleep. All these are matters which afford infinite pleasure to all persons of healthy tastes. The trees are all brought microscopically, as it were, before us; we watch the buds perfected into the blossom, and an orchard-house of peaches in full bloom is one of the most beautiful sights in horticulture. We watch with still greater interest the gradually ripening fruit. Some one has wittily said, "that the orchard-house is the ladies' billiard-table," and certainly a more pleasurable occupation for them, could not well be devised. Peaches, nectarines, or apricots, grown on these pyramidal trees, as they are somewhat incorrectly called, are charmingly ornamental, especially the apricot, the golden fruit of which contrasts beautifully with the green leaves, and what can be more quaint or delicious than to pluck your own fruit from the living tree ornamenting the dessert-table? It will be impossible within the limits of this article to attempt any directions with regard to the management of the different fruit that may be grown in these domestic orchards, we would rather refer



the reader to Mr. Rivers's little volume for these particulars.

It is essential to inform our reader, however, that failure, with even the most moderate care, is the exception rather than the rule. We all know how difficult it is to keep the peach and nectarine trees clear of the brown aphid blight which infests them. These and all other kinds of blight, including the red spider, the pest of hot-houses, can now be most readily destroyed by the application of the new patent composition, termed Gishurst, a kind of sulphur soap, which readily dissolves in water. One or two applications of this compound clears the most shrivelled leaves of these parasites at once without injuring the points of the tender growing shoots, as the fumes of sulphur or the decoction of tobacco-water are sometimes apt to do. But it may be asked, what is the actual gain resulting from this domestic method of treatment? We reply, in point, size, quantity and quality, the fruit is greatly superior to that given by the old method of wall-training.

An orchard-house thirty-feet long and fourteen feet wide will hold, say forty perpendicularly-trained peach-trees, or two rows on either side the centre pathway. These trees in the third year, and henceforth for many years (Mr. Rivers has them still luxuriantly bearing in the twelfth year), will produce two dozen fruit each, or eighty dozen altogether, and by the selection of various sorts and the retardation of the ripening, by the simple expedient of removing some of the trees to an out-of-door north aspect, a constant succession of this fine fruit may be maintained from August to November. The trees should be placed alternately, thus—  
in the double row, so as to give them the utmost amount of light and air. By this arrangement the fruit is ripened all round, instead of simply on its outer surface, as it often happens with wall-fruit. Another important matter is to shift the trees now and then, let the pot in the north-east end of the house be taken to the south-west; a little visiting in fresh air is quite as beneficial to trees as to humans; and this locomotive quality is another advantage that orchard-house trees have over those planted against walls.

Apples, pears, grapes, figs, and oranges, are grown in this manner with the same facility, certainty, and cheapness, as the choicer stone fruit; and, be it remembered, these orchard-houses are designed for small gardens and for small gardeners. All that is required is a slip of ground open to the sun, just large enough to find room for the orchard-house, which should, if possible, lie south-east by north-west, in order that the full summer sun may, in the course of the day, fall upon all sides of the trees.

There is scarcely a suburban road-side slip of garden which may not find room for its peach-orchard, and where room and expense is an object, a small lean-to house may be erected for a very few pounds, which will ripen its fruit as well as the larger ones. And where there are no gardens we may make them on the roofs of our houses, as they do in the East. Where there are flat-leads the erection of glass orchard-houses is a simple matter enough. "But what about the blacks?" interposes my reader. Simply this: we must

treat the orchard-houses in such situations as we do persons with delicate lungs; we must provide them with respirators; over all the openings left in the sides for the free circulation of air, woollen netting with three-quarter inch meshes must be stretched. The small fibres projecting from these meshes filter the air in the most surprising manner, as will be evidenced by the soot entangled within them by the time they have done their work for the season. Moderate frosts are intercepted in the same manner. A gentleman living at Bow, in the midst of the smokiest suburb of London, has in this way produced abundant crops of the rarest fruit for many years; and Mr. Rivers informs us, that he would engage to produce excellent fruit in City orchard-houses, if required to do so. Glass is now so cheap, that we see no reason why the roofs of the houses should not be glazed instead of tiled. By an arrangement of this kind, every citizen may, if he likes, possess his attic garden blooming with fruit, and after it is gathered, with autumn flowers, such as chrysanthemums. Such glass-roofed attics (only far more lofty and expensive ones) already meet the eye in all directions, built for the use of photographers. We see no manner of reason why peaches, as well as pictures, may not be produced in such situations; and indeed there is nothing to prevent the construction of very fruitful "Orchards in Cheapside." A. W.

## A RAMBLE IN THE FOREST OF DEAN.



ROUGH at the present time, railways in the neighbourhood have recently connected this important district with other parts of the kingdom, it is but little known to artistic and other travellers, notwithstanding the scenes of beauty and objects of interest within its borders. In one direction the river Wye murmurs amid rocks and

woods; on the other the noble Severn is seen from many points over high hills covered with forest trees. Here and there are churches of Norman and Middle Age architecture, in which are tombs and other curious memorials. Crosses, richly carved, are to be met with in the churchyards; and in some of the villages the May-poles, the stocks and whipping-posts, and other relics of

past times, are still to be found. In the ancient castle of St. Briaval's, which, with the church of the same name, stands on a picturesque point on the margin of the forest, the old "dog-wheel," made to be moved by the "turn-spit" dog, which was two or three centuries ago in such general use, is still to be seen.

For miles the ground is covered with oaks of various growths, in which are specimens of fat deer, which would have gladdened the sight of the hermit of Copmanhurst. Here the charcoal-burners pursue their work, and lodge in huts formed of rough timber and turf, of the same shape, and quite as primitive as those used by the Britons at the time of the landing of Julius Cæsar. Some of these huts, with gipsy-like cooking apparatus in front, and sun-burnt women and children lounging about, backed by massive silver-grey branches and thick foliage, form rare pictures. On both the Severn and the Wye the coracle, a light boat of wicker-work, covered, which can be easily removed from place to place, of exactly the same shape as that in use by the ancient Britons, is still in fashion amongst the fishermen.

In all directions are traces of the Roman occupation of this neighbourhood. On the hills are the remains of encampments, and in other parts roads on which the original pavement is still visible, although it is far more than a thousand years since it was placed there by the great conquerors and civilisers. Here and there the traveller will meet with rough unhewn stones, which probably have a far greater antiquity.

Besides these objects of interest, the Forest of Dean is rich in large stores of coal, iron, and other valuable minerals. Near Cinderford a great space is crowded with collieries of various descriptions, some of such small extent that the "horse-gin," and even hand-labour, serves to raise the coal; others are, however, fitted with steam machinery and all the aids of modern science. Although this part of the forest has a smoked and withered appearance, it is not without striking features. In the day time it is a busy scene of industry, and at night—the lights of long ranges of coke ovens, the blazing and roaring of blast furnaces, contrast with the stillness of the surrounding country. In other parts, in the midst of woods, on commons, and in other situations, the iron ore miners may be seen no less actively at work; and there are others engaged in quarrying the materials necessary for fusing the iron ore, and in digging stone of a varied and valuable description. In all directions the geologist, the naturalist, antiquary, and artist will find ample materials for observation. Nor are the dwellers of the forest less worthy of notice. The miners, both of coal and iron, are a far more stalwart and intelligent class than those in the counties (if we except the lead miners of the Alston Moor district) of Northumberland, Durham, and Staffordshire; and this may in some measure be accounted for by the independent manner in which the workmen engage in their business.

According to the laws of this forest, any one born within its liberties is entitled to work the coal, &c., to a certain extent, on the payment to the Government of a tithe of all the minerals

raised. In most instances two, three, four, or more Foresters select a portion of ground to which no one has already laid claim, and on giving due notice to the persons appointed, open a mine or "gale" as it is called. The men are thus to a great extent their own masters, and acquire a degree of independence which those who are engaged in large numbers do not often possess. There are also courts and other arrangements peculiar to the neighbourhood. In the centre of the forest is a building of comparatively recent date, called the "Speech-house," in which the chief parts of the disputes of the miners and other business is settled. This court is probably of as great antiquity as the Saxon times. Its labours have, however, been much decreased during the last few years, owing to the arrangement of certain causes of difference by a Government commission, appointed for that purpose. Before this time numbers of the Foresters had sunk "gales," and for the want of proper registration one party's right interfered with another. Mines had also in many instances been sunk in situations which interfered with the proper cultivation of the oaks intended for the public use. In order to prevent this, the land directly appropriated for this purpose was clearly defined; and those who had claims were settled with according to the money value, or else by the exchange of mining ground placed in some more suitable position.

The working of the miners is superintended, on the part of the Commissioners of Woods and Forests, by officers called "Gavellers," who are well acquainted with mining and surveying, who preserve a record of the ore, &c., won, and perform other important duties. Guided by these functionaries we come in some parts upon strange-looking places, called "Scowles;" these consist of rocks of the most fantastic shapes, which form chambers and passages open to the surface. So singular are they, that they assume in some instances the appearance of chapels, with pulpits, and other architectural forms. The scowles are spots from which the iron ore has been taken, so far back that no tradition of its date remains. In order the better to understand the nature of these excavations, it may be worth while to mention, that the iron-stone of this district is found in layers of uncertain form and extent, with masses of other material between; and that the reason of those portions of rock being left is because they are of no use to the miner. It is so long since the busy hands which laboured here have gone to dust, that the stones have become covered with thick mosses and other plants, and great trees have grown which are now decayed with age, presenting a scene so wild, that it is not wonderful that the more ignorant of the people look upon the scowles with a sort of mysterious dread.

The iron ore is wrought in various ways. Sometimes a hole is dug in the side of a hill covered with trees, ferns, &c., and the bright red earth, thickly impregnated with metal, foils strongly with the bright greenery which surrounds. Other excavations descend either at an acute angle or perpendicularly into the earth. In most instances the iron-stone is brought from the place of working, with much labour, on the backs of boys;

this, however, is cheerfully borne; and it is worth while to listen to the quaint forms of speech, which smack of Shakspeare's days. Nor has the old style of hospitality gone out of fashion in these parts; for, in the course of wandering, we called at no house, of either the rich or the poor, without seeing the best cyder and other more substantial materials brought forth to regale us.

The examination of the exteriors of the mines created a natural desire to explore some of the interiors. A party was soon formed for this purpose, who were properly arrayed in the flannel jackets, glazed hats, &c., worn by the miners. Other important, and to us unintelligible, preparations were carried forward at the inn at Coleford. Two men were loaded with small casks of ale, and a variety of drinking vessels, lights of various kinds were stored, a number of small sticks with clay attached to one end, and other matters were properly packed. In due course of time, the entrance of the mine was reached, and those unaccustomed to awkward descents were somewhat startled by the nature of the shaft, which was very narrow, and seemed to descend perpendicularly. On holding the light into the pit, it seemed a deep darkness, but on a more careful inspection, slight projections were visible on each side. Although the arrangement was more suited to bears, than to human travellers, the bottom of the shaft was safely reached, when a cave of considerable size was found, and there our men of experience proceeded to light candles for each person; these they stuck in the clay fixed to the sticks already mentioned. We then saw, that from this part of the mine there were openings of various sizes, which seemed to lead in different directions. Much to our surprise, one of the smallest of these holes, which was barely three feet and a-half high, was chosen as the means of further progress. Into this, by the help of both hands and feet, we managed to enter; the use of the wood and clay candlesticks was now evident, for all limbs being engaged, it was necessary to hold this instrument between the teeth. This narrow passage descended at a gradient so steep, that by means of the rotten soil of shingle we slid down in a bent posture at a rapid rate; being advised, however, to be careful not to let our heads strike the roof, for sometimes only by a slight contact, a ton or more of the shelving top falls with a dull heavy sound, burying those beneath. For long, the way ran through passages of different height and breadth, sometimes descending in the same manner as that just mentioned, and in other parts rising as suddenly, and as difficult to pass through as the cunning avenues in the Pyramids of Egypt.

Except to the "Gaveller," and his attendants, this exercise was trying, and it was satisfactory to find the way widen, and at last, far in the bowels of the earth, to discern our party, hot and tired, in an excavation of immense size—so large that all our candles failed to light the vast mass of darkness above.

With hands and faces of the colour of those of the Red Indians, we accommodated ourselves as well as possible amongst the broken rocks; fancying, doubtless, that we presented a picture which

Salvator Rosa would have been glad to have had the opportunity of painting. While enjoying the refreshment which had been so happily provided, we had time to view the wonders of the cave. As the eye became accustomed to the dim light; mass after mass of the rocks stood out in all the "dusky splendour of Rembrandt." In deep shadows there appeared dark beyond dark, leading the imagination to endless workings, and suggesting the notion that the mine was interminable.

This part of the mine, which must have required hundreds of hands for many years to empty it of the masses of iron stone which was once here lodged, is so old that no one can tell when the works were carried forward; but bronze Roman tools, and other ancient implements, have from time to time been discovered. These and other speculations, called up by the sombre appearance of this interior were interrupted by our forest attendants, who, doubtless, enlivened by the good ale from Coleford, were chanting the favourite provincial ditty:—

For we are the jovial foresters,  
Our trade is getting coal;  
You never knew a forester  
But was a hearty soul.

This led to conversation on the risks of the mines, the accidents by explosions, deficiency of machinery, the falling of roofs (very common in this district, and which might by proper care be avoided), and other dangers. We heard of sad processions, which were sometimes seen winding through the forest paths, of wounded and dead miners, borne on hurdles by torchlight, accompanied by comrades and relations from the scene of accident to their homes; and it is gratifying to find that the same noble spirit which induced young George Stephenson, the engineer, to venture into a burning coal-pit in another district—a good deed, which is not uncommon in both the Northern and Midland counties—has always been strongly displayed in the Forest of Dean.

It would be no easy matter, even by the aid of candle-light, for those not accustomed to the mines to unravel the burrows which are visible, some far up towards the roof, or to find their way to the outward air. "True," said Mr. Gaveler, "persons have been lost in those places, and no doubt perished with hunger. A few years since, a geologist, who had undertaken an adventure similar to ours, discovered a 'lode' of a very scarce and valuable description of mineral, which had not before been noticed. Afraid that if he showed any attention to it in the presence of witnesses, that others might step in and deprive him of a portion of his profits, he therefore craftily took careful notice of the spot, and, afterwards selecting a suitable time, without either mentioning his intention to his wife or any other person, he proceeded to the mine in order to obtain a sample of the treasure. Having entered the mine, and travelled for some distance, as he thought, in the right direction, he became bewildered, and eventually was altogether lost. At length the candles he had taken with him burnt out, and he was left in darkness and despair. His cries, for upwards of two days, failed to reach



any ear. Meanwhile, search was made throughout the district, and at length a party of miners, quite by chance, came upon the track of the geologist, and delivered him, severely bruised and more dead than alive, from his difficulty."

Without, however, dwelling on other mishaps of a similar description, we move on, after having carefully surveyed this cavern and noticed the passages which lead in all directions—most of them of a small size, but others forming avenues like the naves of Norman cathedrals. These, from the equality of the roadway, would seem to have been used as subterranean ways for the carriage of the ore from the workings on each side. Along one of these we wandered for a long distance, and were surprised to hear distant voices, and soon, in the darkness, a solitary light became visible, and then we noticed a party of miners coming along this usually quiet and solitary path after their day's hard work. A friendly meeting took place, the caeks were again broached, and after some

agreeable fraternising with this party, we each proceeded on our way.

For miles these excavations extend, but without presenting features very different from those mentioned. After much clambering and crawling through narrow passages, we once more, by a different opening, got again above-ground; the moonbeams lighted up the tree-branches and moorland, making the progress home satisfactory; and, well tired, we remained for the night at our old-fashioned inn, dreaming of ancient Romans superintending the working of iron and coal in grim pits, and of Saxons, Danes, and others, who have delved in this forest, and aided in the distribution of its minerals to the world.

Although, as we have shown, portions of the forest have been cleared of their most valuable contents, still all that has been removed is but a trifle in comparison with the immense quantities which remain, and which increased facilities for transit will add to the national wealth. B.

### STALE BREAD.

I DON'T like very stale bread—do you? My reason for disliking it is very much the reason why I don't like Dr. Fell; your reason is really the same, but you probably cheat yourself into the belief that it is something else, namely because the bread is "so dry." Allow me to undeceive you. No bread is dry; bread just baked is nearly *half water*; and the stalest of stale loaves has not lost more than a hundredth part of this water.

The fact that bread contains nearly half its weight of water is surprising, but not so surprising as that your own body contains a considerably larger proportion—nearly three-fourths. It is "water, water everywhere, and (often) not a drop to drink." The flour from which bread is made is dry enough, containing not more than sixteen per cent. of water; but it has a great tendency to absorb water, and in the process of baking it absorbs it rapidly. The gum, which is produced from the starch of the flour in baking, holds this water firmly; and the gluten, which forms a coating round every little hollow in the bread, steadily resists evaporation. Thus bread becomes moist, and *keeps* moist, let it be never so stale.

But if stale bread be not dry bread, what is it? What makes that familiar difference between the soft, plastic, spongy crumb, and the harsh, crumbling morsel of six days old? That it is no difference of moisture, has been experimentally verified; every cook, or baker, could have told us that there is no use in placing bread in a moist cellar to prevent the evaporation of its water, since the bread will assuredly become stale as the hours roll on. On the other hand, every baker and every cook could tell us, that if a stale loaf be placed in the oven again for a few minutes, it will come out having (for a time, at least) all the characters of new bread. Yet in the oven it must necessarily have lost some of its water, and comes out dryer than it went in—dryer, but not by any means so stale. Further: who does not know the effect of toasting a slice of stale bread? The fire scorches the outside layers, and renders them completely dry; but, especially if the slice be not too thin, we find the interior layers deliciously soft, plastic, and palatable.

An experiment made by the eminent chemist, M. Bousisingault, proves in a convincing manner that the amount of water in the bread has nothing to do with its newness. He took a loaf six days old, weighing 3 kilogrammes, 690 grammes (a



kilogramme is something more than 2 pounds, a gramme is about 154 grains). This loaf was placed in the oven for an hour; on removing it, a loss of 120 grammes of water was found to have taken place; yet, in spite of this loss, amounting to  $\frac{1}{3}$  per cent., the bread was as new as that just made.

It is the water in the bread which prevents the loaf becoming all crust. In an oven with a temperature of 500 degrees Fahrenheit, the loaf gets roasted outside, and the crust is formed; but the inside crumb never has a temperature above 100 degrees; the water which is there, and which cannot evaporate through the crust, keeping the temperature down. If this crumb is thus slow to heat, it is also slow to cool. Every one knows how long the crumb of a roll continues warm, even on a cold winter morning; and the loaf which was taken from the oven at three in the morning, comes warm to the breakfast-table at ten. M. Bousingault has also experimented on this. He placed a loaf, hot from the oven, in a room the temperature of which was 66 degrees. The law of equilibrium, by which a hot body loses heat until it is no hotter than the surrounding objects, instantly came into operation; but, although all bodies give off their heat to bodies that are colder, they do so with varying degrees of rapidity—some being very tenacious of the heat they have got hold of, and others being the most prodigal of spendthrifts; and thus the loaf, although it began to cool as soon as it was taken from the oven, did not reach the temperature of the surrounding air until twenty-four hours had elapsed—and then it was stale.

Does it not seem, then, that the difference between new bread and stale bread is only the difference between hot bread and cold bread? It does seem so, when we reflect that we have only to warm the stale bread in an oven to make it new again. But there is this fact which stands in the way of such an explanation: the bread which has been re-baked, although undistinguishable from bread which has been recently baked, is only so for a very short time—it rapidly becomes stale again. Were this not the case, we need never have to complain of stale bread: it could always be made new again in a few minutes. The conclusion drawn by M. Bousingault from his experiments is, that the staleness depends on a peculiar molecular condition of the bread; and this condition is itself dependent on a fall of temperature.

But new bread, if more palatable, is very unwholesome, because very indigestible to those whose peptics are imperfect. The peculiarity of new bread, that it forms itself into a paste, is an obstacle to its digestion. But this is only true of the lumpy, pasty, doughy, obstinate, irrational bread baked in our favoured island. No dyspeptic trembles at the new bread of Paris or Vienna. In Vienna they bake—or used to bake, when I lived there—three times a day, and perfectly fresh rolls were served up with each meal. No one complained; every one ate these rolls so alarming to the dyspeptic mind, and would have stormed at an unhappy waiter who should by accident, or philanthropy, have brought yester-

day's roll. But let weak and strong beware how they trifle with the new half-quartern, which, in unshapely, uninviting, and well-founded modesty, stands on the breakfast-table of the British mother. The hot bread may tempt her inconsiderate boy—perhaps the more so because he is assured it is "bad for him." Boys have a very natural suspicion, founded on ample experience, that what parents and guardians declare to be "good for them," is certain to be odious. They are birched for their good, they are bloused for their good, they are hurried off to bed for their good,—and of course they like to try the bad, because it isn't for their good. But, except these young gentlemen, no one with a stomach more delicate than that of a ploughman or a foxhunter should venture on hot bread in England. L.

### RIVER SCENES IN CHINA.

KIENKIANG is a city beyond Lake Poyang, and of course beyond the range of European intercourse. No person in European dress had perhaps ever been within it: and it was therefore just the place in which to note the impressions made on the people's minds. Outside, the city appeared to be about five miles in circumference: within, Lord Elgin found a mere wilderness of weeds and ruins, with a single street running through it. The desolation was recent, and the work of the rebels. The inhabitants were merry and easy, and ready to laugh at every joke of the interpreter; but not the less were they watching the morality of the barbarians. The opportunity was taken to buy some articles of food; but the party had only Mexican dollars with them, to which the first seller objected as strange money. He was told that he should have sycee silver if he came to the ship, whereupon the interpreter heard the remark among the bystanders: "See how just these people are! They do not force their coin upon him."

Nothing seems to have impressed our countrymen more, in their whole intercourse with the Chinese, than their perpetual and practical regard to principles of "justice" in their ideal and in their conduct. Among the facts which came before them was this.

When Commissioner Yeh was raising money for the defence of Canton against the allies, he called upon an old man there for taels to the amount of about 1000*l.*, in addition to the established taxation. "You have two sons," he said, "who are making money in the service of the barbarians, and you must pay in proportion." The old man had not the money, and prepared to sell his patrimony as the only means of raising it. On hearing of his intention, his sons, in English employment, sent to him to say that he must not sell his estate, nor suffer on their account: that it was true that they were profiting by the barbarians, and it was therefore just that they should pay in proportion. They sent the 1000*l.*, and engaged to bear their father harmless. Such incidents as these seem to authorise Lord Elgin's conviction that there must be some other way than terror and violence for managing a people who form their judgments by an ethical standard, criticising barbarians, and

regulating themselves, by the idea of what is "just."

It was vexatious to find every possible obstacle thrown in the way of intercourse with the people by the mandarins, who, on pretence of keeping order, beat away with bamboos all natives who approached the strangers with genial dispositions. Lord Elgin baffled this tyranny by dodging the mandarins, landing where he was least expected, taking spontaneous walks, and declining to turn back when once inside a city gate. Everywhere he found the inhabitants delighted to be spoken to and traded with; and thus some agreeable general views of our future aims were arrived at. But the study of individual characters seems to have been nowhere practicable among the unsophisticated Chinese. The nearest approach to this was perhaps in the case of the pilot taken on board at Kiewhien. He was a talkative and inquisitive Chinaman, wanting to hear all about everything, and proposing to go to England, but not forgetful of family duty meanwhile. When the commodore sent for him, and told him that he was wanted to carry the ship safely up the river, he fell on his knees, and observed:

"That is a public service; and if your Excellency desires it, I must go. But I have a mother and sister who must be provided for in my absence."

"Certainly," was the reply.

"Then I am ready," said the pilot.

And ready he was; for he stepped into the boat forthwith, and established himself on board the *Furious*. Next day, he went ashore in the evening at Tunglew, to get the forepart of his head shaved, and extol the barbarians. On his re-appearance, the ambassador asked him what the people on shore were saying about the expedition. They had been greatly alarmed, it seemed, lest the fireships should attack them; and their hearts went pit-a-pat; but when he told them how well he was treated, and that the British were no friends to the rebels, they said, "Poussa, that is Bhudda's doing;"—equivalent perhaps to "Thank God!"

This person seems to have been just the speculative moralist that the writers of Chinese proclamations appear to be; and, like a good many people outside of China, always ready to explain any phenomena that came to hand. His squadron did not get up the river so easily and safely as he could have wished, being brought to a stop, and kept waiting very frequently and vexatiously. Some of the vessels were large, the depth of water was constantly changing, and perhaps some of the shoals might be so too. However this might be, the journals of the voyagers tell of incessant explorations by the gun-boats, disappointments and delays; unloading of the vessels; unexpected release at one moment, and turning back at another; now a whole series of discouraging signals; and again shouts and hurrahs, heard miles into the interior by the ambassador, while pursuing his explorations among the villagers. The pilot was as perplexed as other people; and, when asked how it was that he could not get through a channel which he had emphatically recommended, he sighed out, "The ways of waters are like those of men: one day here, another there, who can

tell?" This reminds one of the eternal "Quien saabe?"—the lazy answer to all troublesome questions on the opposite shore of the Pacific. Mexicans and Chinese solace themselves in difficult cases by their sentimental "Who can tell?" precisely when the North Americans and British are resolving that they *will* know the reason why. Not the less, however, does the Chinaman offer an explanation of what he can least understand, as when accounting to Lord Elgin for the destruction of the temples by the rebels,—to the amount of thirty such edifices at Chinkeang. The Buddhist priest on the spot believed they did not like temples because they did not use them for worship; but our pilot went more deeply into speculation on the matter. He said that the rich had the advantage over the poor with Bhudda, because they could offer more joss-sticks and other gifts. The rebels disapprove of the gods being so partial, and foil them by destroying the temples altogether. This appeared to be the popular view of the conduct of the rebels, and it must strongly promote their cause with the multitude as against the rich.

Our ambassador had his special opportunity of studying the doctrine of the rebels for himself. Possibly the leaders thought it well to take the chance of converting him. When the expedition was descending the river in the gun-boats, having been obliged to leave the larger vessels among the shoals, intimation was sent to the rebels who held the towns that the British intended to pass up and down, between the port and their ships, doing no harm, and expecting no molestation. In reply, came on one occasion a letter, about three fathoms long, written in royal vermilion on yellow silk, and addressed, "For the jewel glance of the Earl." A translation is before us; and a more wearisome piece of verse than this immense epistle surely never was penned. It assumes at the beginning to be "a proclamation for the information of our foreign younger brethren of the western ocean;" and ends with the invitation, "Come rejoicing to court, and give thanks. Foreign brethren of the western ocean, worship Shang-Ti." But the yellow silk, and the vermilion, and the adorned envelope, and the mystic seals, and the theology, and the verse, and the summons, all failed. Not one of the voyagers went to court in consequence of the invitation, nor before, except for the purpose of conveying Lord Elgin's intimation of the freedom of the river. Their guide, a rebel officer, was anxious to be carried away by the British; and when they declined his company, begged for opium, saying that about one in three of the force in Nanking smoked it. No reliable tidings of the original prince-leader could be obtained, though some insisted that he was living in seclusion with three hundred wives. Opium smoking and matrimony in this style will hardly regenerate China.

While beyond the reach of letters, newspapers and familiar faces, our countrymen must have felt as if transported into the world of many thousand years ago,—so rampant was the fetishism they met at every turn, and so wild the fables which are attached to every prominent object in the

scene. At the Hen-barrier, for instance, near Nganching, where the only passage is close to the left bank, the rest of the channel being occupied with rocks like stepping-stones for giants, the pilot explained why passengers were crowded in upon the shore.

The great rock on the right bank, shaped like a hen, was once an evil spirit which coveted the good land on the opposite shore. Step by step the great hen crossed, barring the stream as she proceeded. In consternation the good spirits appealed to a bonze, who lived in a temple niched like a nest in a pyramidal rock on the left bank 300 feet high, overlooking the pass. The bonze after much reflection, began to crow like a cock, to make the hen turn round, which would break her power. The hen supposed she heard her mate, and turned her head; after which she could never move again. The country-people cut off her head; and there lies her body, and there stand her stepping-stones, with the river perpetually rushing against them.

But we must hasten to the end of our sketch—past open expanses strewn with islands, wooded to the water's edge,—past rocky gorges where the current runs like a cataract;—past prairies where lakes gleam at intervals, and hamlets peep forth from the groves, and corn-fields, divided by causeways, stretch to the horizon;—past the entrance to the Poyang Lake, with its guardian bluff crowned with a fortress, and the circuit of mountains closing in the loveliest view on the river;—past the Benevolent Tiger Mountain, darkening as gloomy weather came on, on the descent of the stream; and, finally,—past the scene which presented itself after Christmas Day, when the hills in the background were white as the Alps, and thatched cottages and fir-woods on the rising grounds sprang conspicuously out of the sheeted snow, while the shore was thronged with a multitude canopied with red umbrellas, and an official personage stood on the brink, waving a red flag. These are only a specimen of the varieties of scenery explored by our countrymen for six hundred miles, while we were wondering what they were about.

The grandest show they saw in China was at the extremity of their voyage, where the three great cities of Hankow, Hanyang, and Woochangfoo, in a group, constitute "the heart of the commerce of China."

Some other hand, with more space at command, will, no doubt, describe this remarkable confluence of rivers, markets, and populations. We can only just notice the meeting of the authorities.

It was here that the greatest efforts were made to interpose mandarin meddlers between the people and the strangers. Presents were sent to preclude traffic for food; but the ambassador sent back the presents, and announced his wish for supplies, and his intention to pay for them. A hope was hinted that he would not cross the river to Woochangfoo, whereupon he intimated by letter his intention of calling on the Governor-General there the next day. A day's delay was begged, in order to make due preparation. Lord Elgin could not have

thirty chairs for his suite, nor eight bearers for himself. The reply that he would go with eight bearers and his suite in thirty chairs, or not land at all, settled the business. The authorities objected no more; but, on the contrary, the Governor-General became obsequious,—shook his head at the folly of Yeh, who would have behaved very differently if he had been at Canton at the time,—knew all about us, and how we had now arrived, bullying the Chinese who had once bullied us, approved of settling matters reasonably, and would do everything possible to promote trade, now that the river was opened, and so forth.

The visit and return visit were very grand—salutes on both sides—a great guard of British marines and sailors, and the procession of thirty chairs passing through a smiling multitude; conversation and tea in a great room; a sumptuous feast in a larger apartment; everything plentiful but conversation; ambassadors to the East finding it hard work to talk with nothing to say, and to say that nothing through an interpreter. But the host was handsome, well-dressed, courteous, and less formal than most of his order. The return visit, the next day, was more lively; salutes again—yards manned in all the four ships—sun shining brilliantly when the Governor-General's huge glittering junk left the bank, towed by six boats covered with triangular flags of all colours; troops, horse and foot, keeping the line from the city to the river, and along the beach in odd and showy uniforms; and on board great eagerness to make the Governor-General happy,—to feast him, photograph him, amuse him for three hours, and send him away thoroughly propitiated. This was done. He no doubt has recorded the greatest event that has been witnessed in the interior, in connection with barbarians; while our ambassador declares that the most splendid reception he experienced in China was six hundred miles up the river, just midway between the Court at Peking and our old and hated haunt—Canton.

Rivers, ports, seas, courts, are all open now,—thanks to Lord Elgin. Every step of his progress was animating to himself, his comrades, and the English at home; but the point around which the strongest interest will probably cling—at least in the minds of the voyagers—is that at which they turned back, leaving a group of three vast cities waiting and longing for the apparition of more pleasant barbarians, bringing with them the commerce of Europe.

HARRIET MARTINEAU.